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BURGLAR PROOF SAFES.

All are interested in the protection of their property and in the security of their money. Merchants and business men have frequently on hand a large amount of money and valuables, in addition to important books and business papers, and this fact naturally causes them to look to the best and safest manner of securing their possessions from theft and destruction; banks, associations and companies who hold the property of individuals, require ample and reliable means for the preservation of their trust. The absolute necessity of these provisions has given rise to much ingenuity and skill in the manufacture of what are termed safes that are claimed to be proof against both fire and burglary. Our readers will remember how efficacious such safes proved to be in the great conflagration at Portland, Maine, when valuable books and large sums of money were left intact in the midst of burning heaps of property. It is apparent, therefore, that to posses a safe that is proof against both fire and burglary, is to have the very best security under all circumstances. We here represent an excellent burglar proof safes, manufactured by Terwilliger & Co., who have supplied some of the most prominent banks, bankers, merchants and tradesmen with burglar and fire-proof safes, and who own a patent for constructing them of welded steel and iron. By reference to the engraving it will be seen that A represents angle iron frame work; B angle iron corners extending from front to rear frames; C boiler plate iron to fill up panels; D breaks (or steps) on the door which correspond with those on safe; E Bolt Frame; F a large nut holding the conical bolts which extend through and bind the door.

TERWILLEGER & CO.'S BURGLAR PROOF SAFES.

The front and back frames are made of heavy angle iron which is bent and welded at the corners, so that when finished, it forms a solid hoop and frame, front and back. Under this the boiler iron is placed, which is securely riveted to frames. The corners running from front to back frames are also formed of solid angle iron, thus forming panels filled up so as to make it smooth on the outside. The filling up of these panels is done to prevent the corners from being wedged or forced off. There is therefore a wrought-iron box, from one-half to three quarters of an inch thick, and this is lined with steel and iron-welded bars, (steel surface outward,) which extend from front to rear and across back. These bars are bent so as to protect the four corners of the Safe. The second layer of steel and iron welded bars or plates, running at right angles with the first, protect the other four corners, and so on until the required thickness is obtained. In making the safe, rebates or breaks are formed at the four sides of the door to prevent it from being wedged open, and also to protect bolts from being sawed off. The door is made of three-eighths or half-inch iron. This forms the first rebate or break on door; then the first layer of steel and iron welded bars are put in, which forms the second rebate; next a second layer of steel and iron welded bars, running at right angles with the first layer, which forms the third rebate or break—and so on until the desired thickness is ob-

tained. These are secured together by the usual screws, rivets, &c., and in addition to this we use our compound constructed steel and iron conical bolts, made of alternate layers of steel and iron, which, after being welded together, are twisted so that both iron and steel take a spiral course. These bolts are made conical shape to prevent them from being driven through, and are held on inside of door by large nuts, which binds the door firmly together; they also run through the frame holding the safe bolts, and are again secured by a heavy nut. The superiority of this Safe is found in many particulars, but especially in having the steel and iron securely welded together. (A good illustration is shown in an iron hammer, steel faced.) Other safes made of steel, chilled or Franklinite iron, being in separate plates, the wrought iron can be cut away, and the steel, chilled or Franklinite iron, easily broken and removed. The patent combination of steel and iron, welded together, prevents the successful use of the tools of the burglar; the hardened steel resisting the action of the drill or circular cutter, while the tenacity of the wrought iron secures the plates from being broken by the blows of a sledge or hammer.

A great variety of fire and burglar proof safes may be seen at the salerooms of the manufacturers, No. 100 Maiden Lane, or at the safe manufactory, West Houston street, New York City; at the latter place, there is every facility for the manufacture of first-class fire and burglar-proof safes.

Immigration Statistics.

The immigration to the port of New York for 1867 has been as follows:

Germany	117,591	Wales	142
Ireland	65,134	South America	97
England	33,712	Japan	87
Scotland	6,315	Portugal	79
Sweden	4,843	Australia	44
Switzerland	3,985	Canada	42
France	3,204	Mexico	28
Holland	2,156	Nova Scotia	22
Belgium	1,623	China	17
Denmark	1,372	Greece	8
Italy	1,632	Central America	7
Norway	309	Turkey	6
Poland	268	East Inies	4
West Indies	214	Africa	2
Spain	203		
Russia	185	Total	242,371

The accessions from Canada were larger than any former year, but as they came across the border they would not be shown in this table. The following shows the number from three European countries for two years:

	1866.	1867.
Ireland	68,047	65,137
Germany	106,715	117,591
England	36,186	33,711

The following gives the yearly arrivals of immigrants at the port of New York for the last twenty years:

1848	189,176	1858	78,589
1849	220,791	1859	79,322
1850	212,603	1860	105,162
1851	289,601	1861	65,529
1852	300,992	1862	76,306
1853	284,945	1863	165,844
1854	319,223	1864	225,216
1855	136,823	1865	196,347
1856	142,342	1866	233,398
1857	193,773	1867	242,371

It is said that the prospects for a large immigration for 1868 are by no means flattering, owing to the depressions in the trade and business in this country.

Paddled his own Canoe a Distance of 20,000 Miles.

Mr. F. Poole, a wealthy Englishman, has paddled himself in a canoe, since July last, a distance of 20,000 miles, He started from Liverpool, and after paddling along the coast and out into the Irish Sea for several days he touched at many points on the Lancashire, Westmoreland and Cumberland coasts, visiting the majority of the English lakes in his frail boat, then proceeded round the coasts of Wightonshire, Kirkcudbrightshire, and Ayrshire, occusionally landing and making a geographical survey of the country, till reaching the Frith of Clyde, in which he stayed for several weeks, exploring the bays and lochs of the Frith and of some of the western islands. Returning to Glasgow, he paddled through the Forth and Clyde Canal to Grangemouth, whence he sailed to Leith. The canoe in which Mr. Poole accomplished his voyage was built for him in Canada, by a tribe of Caughnawaga Indians, and is composed entirely of one sheet of birch bark, beautifully sewed and admirably modeled. The canoe is very light, weighing when empty, only sixty pounds, and measures fifteen feet six inches, and one foot three inches in depth. In this frail boat Mr. Pool, as a geologist and mining engineer, voyaged for eight years among the rivers of British North America to the Rocky Mountains, across which he carried it, and paddled thereafter down the many streams arising on the west water-shed of the Rocky Mountains, down to the Pacific. By its means he proceeded to Queen Charlotte Island, which he explored, having been the first white man who set foot on the Island. During all his wanderings among the islands of British Columbia, he paddled no less than 18,000 miles, and in the course of his geological surveys, he was the only surviving member of a party of eighty-six, Europeans and Indians.—*Montana Post.*

Mineral Statistics of New Zealand.

In 1853 the metalliferous and mineral productions of New Zealand were reprsented by 170 tons of copper ore, and 3 cwts. of iron sand; yet the yield of subsequent years has shown that it is not without important mineral resources. The discovery of gold in 1857 appears to have caused copper to be much neglected, for during the past four years the item has entirely disappeared from the list. During the fourteen years ending 1866 (in which year the yield of gold reached 735,376 ozs.) the total quantity of gold and of all other metals and minerals, the produce of New Zealand, which have been exported has amounted to a very large quantity, considering the comparative infancy of the colony. The export of gold has been 3,059,461 ozs.; of chrome ore, 5306 tons 3½ cwts.; copper ore, 2374¼ tons; coals, 290 tons; iron sand, 161 tons, 13 cwts.; and of plumbago, 7 tons. Although the gradual and important increase in the annual yield of gold has not been kept pace with by the other metals, it is probably owing only to the limited population and insufficient capital available for industrial pursuits, so that it may be anticipated that at no distant time New Zealand will occupy an important position amongst the mining countries of the world.

Original Papers.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

ON A THEORY OF GOLD GENESIS.

Being the Substance of a Memoir read to the AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, at the Buffalo meeting, August 1, 1866.

BY PROFESSOR HENRY WURTZ.

Continued from Page 50.

III. GOLD-GENETIC METAMORPHISM.

DISCUSSION OF THE SEVENTH POSTULATE; WITH SOME VIEWS UPON VEIN-GENESIS.—(CONTINUED.)

Some points in connection with these general views of metamorphism call for further attention.

In the first place, as to the original forms of the cavities left by shrinkage in the mass of the sedimentary matter, we can at present but form a hypothesis; though much light could doubtless be thrown upon this question by experiment. When we consider the plastic and yielding consistence of the mass, and the permeation by elastic fluids (water, steam, or gases) under high pressure, it seems most probable that such cavities must have had, in the first instance, forms more or less *spheroidal*. This agrees with the analogies presented by cretaceous, carboniferous, and other rocks, whose former cavities, now occupied by flint, ironstone, etc., are still spheroidal, indicating their original character of flattened vesicles of gas under pressure.

No fact, however, is more prominent with regard to the intercalated "segregated" masses in crystalline schists, including the strike-veins, than their general forms of beds with edges more or less acute; or their "lenticular" form, as it is often termed.

In fact, it may be asserted that many vast masses of such schists (those belonging to the great belt on the Atlantic flank of our Appalachian system, for example) are in great measure made up of interlaced, or rather, interleaved beds of a great variety of compositions, almost all having this general lenticular shape, and usually themselves composed of subordinate masses, conforming to the same general law. Even the alternations of expansion and contraction, the "thinning out" and "thickening up" found in mining to characterize such beds (including quartz lodes, beds of magnetite, hematite, etc.); are features referable to the same general fact.

This general law of the lenticular form of beds and strike-veins in crystalline schists falls simply and naturally under the above views. Whatever may have been the first shape of a cavity formed by the shrinkage of volume due to crystalline coalescence or compaction (and whatever may have been the material which subsequently filled such a cavity, whether gelatinous silica or silicates, ferric or ferroso-ferric hydrate, or pasty precipitates of silicates, carbonates, etc.) so long as the beds had not yet acquired perfect rigidity, the force of compression resultant upon any disturbance of equilibrium (accompanying either elevation or subsidence) would flatten out the more recently deposited and more yielding materials in planes at right angles to the compressing force; and as these planes seem in most cases to have coincided with those of the original bedding or lamination of the sediments, these plastic materials would therefore be forced in between the laminæ, after the fashion, and in the form of wedges.

Some injected masses and dikes have also doubtless had a similar origin. A cavity or fissure, originating either from shrinkage or disruption—if occupied in the first instance, not by an almost incompressible liquid like water, but by gaseous matter, susceptible of great compression, and at times also of escape into the atmosphere above, or of absorption by water—may be readily conceived to have become filled with semi-fluid gelatinous or pulpy matter squeezed out of its walls (composed of hydrous silica or silicates, or of precipitated oxides or sulphides of iron, etc.); to become afterwards solidified, or even anhydrous and crystalline; it may be wholly, or in part, from the influence of heat, convected from the deeper parts of the fissure, together, we may suppose, with a diminution of the pressure of the pent up gases. Conflicting neptunic and prutonic views are thus susceptible in some cases, and, to a certain extent, of reconciliation.

In addition to the variable compressions and tensions accompanying the oscillations of level; I have to point out another secondary but important cause of pressure which must have always come into play, and in peculiar ways, during the epoch of subsidence. This is simply the pressure due to the *weight of the ocean*; a force which must have been propagated indeed even to many parts of the interior of the mass, through the pores and fissures, even where these latter had been more or less filled with gelatinous or pulpy matter. It is here I find the explanation of the occupation of the cavities of fossils with mineral matter, as the serpentine and calcite injections of the eozoon, the calcareous casts of newer fossils, the greensand grains of all ages, etc. The cavities left by the decay of the organic matter of all such fossils, during the stage of *elevation*, would naturally be left filled at first with gaseous matters (or possibly liquids, such as petroleum), all soluble, more or less slowly, by water; and those fossils which lay imbedded in silicious pastes or jellies would therefore become injected therewith, in measure as these matters were removed either by solution, or by evaporation, or escape to the upper air.

The mode by which such a silicious jelly might be subsequently converted into silicates of the oxides of the oceanic solutions, such as *serpentine, chlorite*, etc., during the time of subsidence, has already been sufficiently set forth. With regard to those highly *ferrous* minerals, *glauconite, vivianite*, etc., which are often found replacing animal matter; I will at present suggest only the probable connection therewith of the well-known power of most organic matters to reduce ferric to ferrous compounds; and throw out the additional remark that we can expect to arrive at a full understanding of this class of phenomena only after the complete development of the laws of the *dialysis* of saline solutions through silicious and other mineral jellies, and the modifications to which these laws may be subject, under heavy pressures.

[To investigations of this latter class must we look for light upon the chemistry of our present oceanic depths; to explain, for example, the surprising observations of BAILEY and POURTALES (DANA'S Geology, p. 749), regarding the probable formation, at the present day, in the depths of the Atlantic, of glauconite fossil casts of several living species, etc.]

This subject, though fascinating, must be put aside, and we must hasten on to the conclusion of our brief sketch of the history of continental development.

To complete, therefore, our ideas of the epoch of subsidence, let us turn for a few moments to the *surface* of the sinking mass, and glance at the changes which must have proceeded there. And here I wish to suggest that, in my view, sufficient importance has not been attached, by writers on this subject, to the necessity of accounting, both in mode and measure, for the sources of the materials from which our *seven or eight miles in thickness* of palaeozoic strata (from the base of the Potsdam up) has been constructed. My mode of viewing the subject gives, to my own mind at least, some satisfaction on this head. The mountainous barriers or borders of the interior continental basins, during the stages of depression, must in places, according to my theory, have formed *enormous reefs*, over which the ocean—lashed into billows, literally "mountain high," by the mightier tempests of those days, and urged into *currents* of stupendous force and volume by reason of the greater variations of temperature and density in its different parts—continually dashed and poured; thus carrying into the interior basins those masses of comminuted materials that were subsequently arranged and rearranged into the later sediments of the palaeozoic seas, and piling up, doubtless, masses of debris against the exterior slopes also.

In our conceptions of the *measure* of these effects, besides always bearing in mind the great *duration* of the period of their production, we have to take into account also other important elements I have pointed out; that the rocks were then only just undergoing consolidation and still comparatively easily fractured and ground up, and that the surface to a certain depth had been softened and decomposed during the previous elevation into the atmosphere.

A period of *elevation* again arrives, and the atmospheric oxygen and water encounter a new surface upon which to exert their solvent energies; whereby those components of the schists which are soluble in these agents (silica, sulphides, and so on) are carried to still greater depths, and concreted again, more compactly than before, in the pores and fissures; and these alternating actions have gradually concentrated the gold, and thus, in a most wonderful way, brought within the reach of man this beautiful metal, which otherwise would never have been other than a rare curiosity of the laboratory, or indeed might have altogether eluded discovery up to this day.

[TO BE CONTINUED.]

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

BLOW-PIPE COAL ASSAY.

BY BENJAMIN SMITH LYMAN.

Many young assayers are perhaps hardly aware how well adapted the blow-pipe apparatus is to the assaying of coal. Not only does the portableness of the apparatus make it very convenient for use away from home, wherever the scales can be set up; but its use at home is quite as satisfactory on the score of exactness as the assay with the muffle or retort, or large platinum crucible and large scales.

Besides the ordinary pieces of the blow-pipe apparatus, as made at Freiberg, all that needs to be made expressly for the coal assay is a small covered platinum crucible of the same size and shape as the clay crucibles of that apparatus; and there must be a little ring for the crucible to stand on, of German silver, about three-eighths of an inch across, and half that in height. Such a crucible cover and ring weigh about two grammes and a half more than the ordinary metallic cup that rests on the pan of the scales; the crucible and ring without the cover weigh less than two grammes more than the cup. If it be desired to determine the amount of hygroscopic moisture in the coal, a small drying bath must be made too; but W. R. Johnson's coal assays have shown that the hygroscopic water in ordinarily well dried coals (not brown coals) is of little importance.

The size of the crucible allows the coking of 200 to 600 or more milligrammes of coal, according to the dryness of the coal and the extent of its swelling up when heated; and as the blow-pipe scales (of Lingke's make) weigh within a tenth of a milligramme, it is easy to weigh within much less

than a tenth of one per cent. of the amount of coal assayed, much nearer, in fact, than the exactness of the coke assay in other respects. In this point, indeed, the blow-pipe assay is quite as good as the assay with the larger scales, especially the muffle assay, where the coal must be brushed into a clay receptacle after weighing, and the coke or ashes brushed off from it before weighing; while here the crucible is weighed each time without removal of its contents, and without danger, therefore, of losing anything or adding any dust. It may be objected that the smallness of the amount of coal that can be assayed with the blow-pipe makes it a less trustworthy indicator of the general composition of the coal than a larger assay; but the size of the lumps or powder assayed may be made finer accordingly, so that when mixed up, an equally just sample of the whole mass would be got for the small assay as for the large.

Any one who has a little experience, both in the use of the blow-pipe and in the ordinary muffle assay of coal, would scarcely need any further teaching for the coal assay with the blow-pipe. For others, it is worth while to say that the coal may be assayed either in a fine powder or in little lumps, and either with a slowly increasing or with a quickly increasing heat. A quick heat will give less coke by several per cent., but will often make a dry coal cake together that would not cake with a slow heat. The cover of the crucible should be left open a little crack, for the easy escape of the gas, but covered enough to prevent any flying off of solid material. The heat should increase to redness, and as soon as the escaping gas stops burning the heating should be stopped. As some coals part with their gas more quickly than others, of course no definite time can be fixed for heating all coals; but the burning of the gas is a good enough sign. Care should be taken not to let the coke take up moisture from the air before weighing, as it will quickly do if it has a chance. Of course, owing to the different effect of quick or slow heat, a certain uniformity of result, even with perfectly uniform samples of coal, can only be got, without error, by practice and by mechanical skill, by reproducing with nicety the same conditions in successive assays.

After the coke has been weighed, it can be heated again with very free access of air, say, with the crucible tilted to one side, with the cover off, until everything is thoroughly burnt to ashes; and these should be re-heated until no change for the less is made in the weight. With free burning soft (semi-bituminous) coals this burning to ashes is very slow, so that it is very fatiguing or even impossible to carry it out with the blow-pipe; but in that case the crucible may be heated over a Bunsen gas-burner or an alcohol lamp and left to glow for hour after hour. For the matter of that, the coking is far more conveniently done in the same way than by blowing with the mouth.

Here is a pair of blow-pipe assays, made five years ago, of some West Virginia asphaltum, that seemed itself to be much more uniform in composition than coal from different benches in one bed is apt to be:

	VOLATILE MATTER.	COKE.	ASHES.
No. 1,	(47.29 per cent.)	52.71 per cent.	1.65 per cent.
No. 2,	(46.93 ")	53.07 "	1.81 "
Mean,	47.11 "	52.89 "	1.73 "

Iron Railways.

Adopting some well-known conclusions in regard to wooden sleepers, railways in different parts of Germany have lately been constructed without the use of wood. The rail is made about nine inches high, with a broad flat base, which rests on a well-prepared bed of ballast, and when properly fixed is farther supported by a layer of gravel. The effect of this is that the jerky motion of a train, occasioned by numerous cross-sleepers, is successfully obviated, and the hammering sound becomes a steady, continuous roar, the longitudinal bearing is distributed over a greater distance, and the need for repairs occurs but rarely, as the life of a good iron railway may be said to be thirty years. These beneficial results were not unexpected by the civil engineers of Germany, and the conviction which effected the change is to a great degree participated in by Americans, some of our railway engineers have examined the question, and came to the very sensible conclusion that an iron permanent way is the best, especially for the vast prairies of the West. We hope the good results obtained elsewhere by this change will soon be the fruits of our own experience.

Inexplosive Nitro-Glycerine.

The London *Chemical News* says that when nitro-glycerine is dissolved in two or three times its bulk of methylated spirit it is quite inexplosive, and when required for use the addition of water will precipitate the oil, the layer of water and spirit merely requiring decanting off. The nitro-glycerine separated in this way possesses explosive properties quite as active as the original oil, which indeed is frequently rather improved than otherwise by the treatment.

Beet Root Sugar.

A gentleman of San Francisco has made arrangements with European capitalists to introduce the cultivation, on a large scale, of the sugar beet, and to establish factories for the production of raw sugar therefrom, in California. The capitalists have agreed to invest $1,500,000 in the enterprise, and to import six or seven hundred skilled laborers. The California beets, it is said, will yield two per cent. more sugar than those of France; and as the industry is now so profitable in the latter country, the prospect is encouraging for its growth in the Golden State.

Mining Summary.

GOLD AND SILVER.

Colorado.

The present condition of the Consolidated Gregory mine, in which work has been suspended for some time, is thus noted by the Central City *Herald*, of the 7th inst.: The main shaft is 340 feet deep, 6 by 11 within timbers, and divided in the middle for bucket and pump shaft; the ladder road or footway is in the pump shaft, which is close cased to the bottom of the mine, and at every fourteen feet is a platform to rest on; to take the next ladder, you pass around the last travelled; a guide is fixed three and a half feet high to prevent parties from falling in the pump shaft. We will say, for information, the shaft is timbered with setts three and a half feet apart—timber 8 by 8—this being the best and strongest way to timber shafts, and is a masterpiece of workmanship. One hundred feet from the surface is a set of catches which, should the rod break, will prevent any damage to the pump below. The first level is 230 feet from the surface; the plunger pump is fixed here in a tank or cistern about five feet square. This level has been driven about 220 feet west, and has opened out a large body of ore, which has been back-stoped for one hundred and fifty feet in length, and holed to the old workings, the ore being sent to the company's smelting works. After going 200 feet through this level, we arrive at No. 7 shaft; this shaft is timbered in the same manner as the main shaft; the drift extends thirty feet beyond; the vein in the present drift is fully six feet wide, and looks rich, but little has been stoped out west of No. 7. A substantial stull has been put in, which is loaded with wall rock, making this portion of the mine perfectly secure. The second level is 300 feet from the surface, has been drifted east 200 feet, and holed, or knocked through to the Black Hawk mine. The back has been stoped 100 feet, and holed to the old workings. There is a fine lode of ore in the bottom of this level which pays well in a stamp mill, as was proved the last time worked. West of the shaft, a drift has been run 150 feet through a body of ore from four to five feet wide; considerable back stoping has been done here also, and a substantial stull put in to take the wall rock, instead of hoisting it to the surface, thus saving time and expense to the company. This drift looks well; a large stream of water runs from it through pipes the entire length of the mine, and discharges over into the Black Hawk property, thus keeping the Gregory perfectly dry, and more easily worked. A track is laid into these levels, and a wagon runs out all the quartz, which is dumped into a large tip platt, (a Cornish term for a place to hold quartz and the bucket-filler to work in). At the bottom of this platt, and in line with the west end of the shaft, is a gate or door, hung by hinges at the bottom; this gate is in two sections, each three feet wide and about nine feet long, made of 6 by 6 timber, and when they are hoisting, this falls over the shaft, completely covering those working below, and also prevents all rocks from falling on them when the bucket is ascending or being dumped at the surface; these gates are at each level. The shaft is sunk forty feet below, and looks well in the bottom; the whole vein runs $200 per ton by assay. About three feet below this level is another cistern, and a drawing or suction pump is put in it and pumps to the plunger above, being supplied from the pump that extends to the bottom of the shaft; a set of yokes are binding the pump, and are fastened by four bolts eight feet long, and connected to lower or raise the pump as required. The mine is in splendid condition for breaking any quantity of quartz, being opened systematically with a perpendicular shaft. We regret the mine is not being worked; it is a pity to abandon such mines, even for a short time. We hear the company are about to start up again, and propose prosecuting work in Colorado this time, and not in Wall street as heretofore. .....A correspondent thus writes, in the Denver *News*, from Boulder, Jan. 25: The recent "winter of our discontent" has passed, and we are again in the enjoyment of glorious weather. It takes a few such cold snaps to make us realize that our winters are generally far superior to any in the same latitude in the States. We expect to be ploughing for spring crops in a week or two, and the farmers are sanguine of good yields next season, with no fear of grasshoppers. The favorable weather is adding greatly to the activity in prospecting and developing. In Ward, they have silver on the brain slightly, but two feet of snow has a cooling tendency. Nevertheless, the monster Ni-Wot mill, as well as Haswell & Henry's ten stamps, and the Long's Peak mill, are pounding away cheerily. The latter, as well as the Comet lode, was leased by a co-operative association known as the Poor Man's company, and they have got through the vexatious cap which caused Mr. Pomeroy to look so sour all last summer. The Long's Peak company now talk of buying back the lease. Thus a little nerve has given the eastern gentry encouragement to feel for their wallets. Altogether the district is much more lively than any previous winter. James Creek holds its own in population, and work is going on regularly, though the recent cold weather has frozen the stream so that mills and arastras are now all idle. As soon as a thaw occurs they will be at work again. In the interim, the effort is to get a little deeper on many very excellent lodes. The Potosi, owned by Cobb & Co., which was exclusively gold bearing on the surface, and for many feet down, now, at a depth of one hundred and twenty feet, is running into a very rich silver ore. In fact, this is the history of all the lodes in the district as they become developed. The Potosi yields well under stamps in free gold, but it will soon require a different treatment. In Gold Hill district all is bustle and life. The celebrated Hoosic, with its extensions, is being worked vigorously, and development only adds to its character for strength and richness. Works for the reduction of its ore will be put up early in the spring on an extensive scale. Many other lodes in its vicinity, of apparently equal wealth, have been discovered, and the prospecting fever has in no wise abated. Running parallel with the Hoosier, and within a distance of two hundred feet, three other lodes of about the same size and character have been discovered. In fact, the whole mountain appears to be a mass of silver bearing quartz. Between Gold Hill and the valley some very valuable silver lodes have been discovered, and the surface indications will warrant the belief that even hundreds of lodes as good as the Hoosier only wait the sturdy blows of the prospector to prove their wealth. The geologic formation here is peculiar. A monster lode, in places fifty feet wide, runs from Gold Hill in a straight line towards Boulder City, which finally splits up into many spurs and ends in the formation immediately west of the limestone. Just inside of the hogsback, and within one mile of Boulder, six of these spur prongs have been discovered, and are now being developed, which have larger veins of silver ore, and promise to be very rich. Within three miles the Stanton lode, (closely allied to, if not a part of, this mammoth lode,) is being developed where it crosses Four Mile creek. The vein of ore is six feet wide at a depth of ten feet. The blossom has assayed one hundred and twenty dollars to the ton. It must be much richer now, but no recent assay has been made. The owners are waiting for the territorial assayer to get going. This lode, for richness of ore, strength of vein and in its favorable location, is scarcely equaled in any place. The lode crosses a beautiful park, about fifteen acres in extent, where immense quantities of timber are near. The discovery shaft is being sunk near the foot of the mountain on the south side of the park, and within twenty rods of the creek. Nature has never been more lovish of her favors than in this instance. The owners expect to show inducements that will enlist capitalists to the extent of money to put up reduction works. No better investment could be made. Cords of pay ore that would yield $100 to the ton have been thrown out already, and for a long distance on the lode, it is believed pay would be got from the surface. Some good judges pronounce this a more valuable property than the Hoosier. A ton of ore from the Hoosier has been taken to the mill of Crosby & Thompson, on South Boulder, for treatment. Heavy bets are taken on the yield. When the result is known I will advise you, and give the mode of treatment. Some recent improvements have been made to the Crosby & Thompson process, and the proprietors now claim it is a success. It is to be hoped their claim is well founded.....The *Herald* says of the gold lodes of Lake county: The coming spring promises to give a new impetus to gold mining in this territory, and Lake county will be the scene of active operations. Many of the lodes discovered in that county during the past two seasons are far richer in free gold than any heretofore opened in Colorado. We give the names of a few of these lodes, together with those of their owners: The "Five-Twenty," Messrs. Berry, Hoover, Maxey, Burt and Whipple; "Lake County," Mr. T. S. Wells, J. Wells, S. D. Breece and E. Hilton; "Berry Tunnel," S. D. Breece, A. S. Weston, R. Berry, T. S. Wells; "Coupon," R. Berry, Hoover, Maxey and Burt; "Betsey Jane," A. J. Hill, G. Girber, S. Girber and Thos. S. Wells; "Dompsey," J. Dompsey and John Leahey; "Uncle Sam," P. Roys, McKee and T. S. Wells; "Moyer," Wm. Moyer and J. Moyer. These lodes are all situated in California district, at or near the head of California Gulch. None of them prospect less than twenty-five cents, and from that sum up to five dollars to the pan of dirt. The "Five Twenty" has paid as high as thirty dollars from a single pan, and six dollars from one pound of dirt. This is undoubtedly the richest gold lode ever discovered in this territory, and shows a well-defined crevice six feet wide at a depth of forty feet from the surface. The foregoing statements were obtained mainly from Capt. S. D. Breece, an active and energetic miner, and a gentleman of undoubted veracity. The Captain is engaged this winter in running a flume in California Gulch. He is a man of the right stamp, and allows no failure in any enterprise that he undertakes. Very many of our citizens in various parts of the territory have been anxiously awaiting the development of these southern mines. The surface quartz in that portion of our mineral region has always been regarded by our best miners and prospectors as more promising than in any other part of Colorado. It shows more free gold, and has always given larger assays, and can be worked successfully by the common and old-fashioned methods of treatment. This gives these gold mines a great advantage over those of Gilpin and Clear Creek counties, as although the latter are undoubtedly rich, yet the gold is held in such thorough combination with sulphur and other obstinate compounds, that a process for its perfect separation has not yet been discovered.....The same paper says: Nevada district is turning out more ore at this time than any other in the county. Indeed, we may say that three-fifths of the ore raised in the county comes from Nevada. Owing to the scarcity of water, only one mill, that of Whitcomb's, is running. The mills generally are situated on the sides of the gulch, and receive their water through flumes which, at this season of the year, are frozen solid. The ore is being crushed by the Black Hawk mills..... The weather, says the Georgetown *Mirror*, Feb. 6, has been splendid during most of the past week, and in mining and prospecting there is an increased activity. Many of our miners are, however, seeking employment in other avocations until the season fairly opens .....Some parties from Denver are working a silver lode near Golden Gate. They are said to be down about forty feet, and have a seven foot crevice. We have not learned anything in regard to the value of the ore they are taking out. .....The *Herald* of the 11th inst. says: Garrott, Martine & Co. have got their steam engine in place, and will commence running to-day. They have about eighteen tons of ore on hand waiting for treatment. The shaft on the New Boston lode is now seventy-three feet deep; one side of the shaft, supposed to be wall, proves to be a streak of mineral. The tunnel is now ninety feet long. The London assays in silver, $644 30 coin value per ton, is looking well. The Coin extension is opening up finely. It is rumored that the Cornet lode has been sold. John P. Hannan, of Georgetown, who is running the contract on the Baker mine, was in town yesterday, and says he was up at the Baker on Friday last; the work is advancing rapidly and satisfactorily; the vein of ore is improving every day. A large quantity of ore will be on the surface by the time the mill is completed next June. Mat France was at the Brown mine on Friday last, and reports the cross tunnel completed to the vein. This tunnel enters the hill about 190 feet below the lode, and cuts the vein at a depth of about 100 feet from the surface. A drift has also been run along the vein a distance of 130 feet, at the end of which a shaft 100 feet deep is to be sunk. This shaft is now fifty feet deep, and shows a two foot vein of ore, which assays over $2,500 per ton.....The Central City *Register* did not reach us this week.

Nevada.

Silver Peak District.—From W. B. C. Harker, who arrived in the city last week from Silver Peak and Red Mountain Districts, says the Austin *Reveille*, Jan. 25, we learn that the operations of the Silver Peak and Red Mountain Company are progressing finely under the management of J. E. Clayton. The mill will be finished in April, and will present many features of great excellence. Only the gold-bearing ledges of the company, situated in Red Mountain, are at present producing ore; the rich silver veins of Silver Peak are lying idle. The fall of snow was light in that section, having been an inch or two in the valley and not more than six inches at the mines in Silver Peak mountain.

Newark District.—By a person just arrived from Newark District, says the *Reivelle*, we have been informed that the mill of the Centenary Company was at work producing bullion, though it will be closed before long for want of salt, its supply of which can scarcely be replenished before next spring. The Chihuahua and Lincoln mines of the company are being worked steadily, and their fine appearance is cheering to the agents, who will continue their exploration with unabated vigor. Our informant spoke in the highest terms of the Chihuahua, which he believes to be all that its owners could desire of a mine. The snow was not deeper in that district than it is in the vicinity of Austin, but the weather has been uninterruptedly cold since the advent of the present year.

San Antonio District.—Yesterday nearly 4,000 ounces of crude bullion were brought into the city from Rigby's mill at San Antonio. A lot of about 3,000 ounces was sent here from the mill on the 8th instant. In proportion to its capacity it is the most productive mill in the country. It was designed for prospecting, and has a battery of four stamps, each weighing 450 pounds; one roasting furnace and one pan. Under the able management of Mr. Rigby the little affair is of quite as much account as an ordinary ten-stamp mill. The bullion produced at the mill is obtained from ore of the Liberty mine, which is the valuable property of Mr. Rigby's company.—*Ib. Jan.* 24.

Reveille District.—The New York and South Twin River Company have purchased several promising mines in this district, and intend erecting a ten-stamp mill in the spring.—*Ib.*

Pine Grove District.—The Virginia City *Enterprise* of January 28 says: Mr. T. W. Abrahams, formerly editor and pro-

prietor of the Dayton *Sentinel*, yesterday arrived in this city from Pine Grove. He exhibited to us some fine specimens of ore from the Wilson mine, taken out near the Midas line, that were full of bright spangles of free gold. He brought with him 111½ ounces of bullion from that portion of the Wilson mine upon which Toombs & Co. have a contract. This bullion is the product of about 40 tons of ore worked at Crosman's arastra mill. The bullion was melted into a bar by E. Ruhling & Co., assayers in this city, and was found to be worth $1,981 69, or nearly $50 per ton. Wilson's new 10-stamp mill started up about a week ago, and a clean-up will soon be made. Messrs. Toombs & Abrahams will shortly erect a 5 stamp mill, which they will procure in Washington District and remove to Pine Grove. The Wilson, Midas, Ophir, Wheeler, and Cadmus mines are being vigorously worked, and are all looking better than at any previous time in their history. Pine Grove bids fair to become one of the best mining districts in the State, outside of Virginia and Gold Hill districts. There will soon be half a dozen mines making regular shipments of gold bullion from that section. Much less snow falls in Pine Grove than here. Wood and water are plenty, and all the owners in the leading mines appear to be in a fair way to make their fortunes.

Silver Bend.—Messrs. Leon & Mullen contemplate the erection of a small mill at Belmont early the coming spring, for the purpose of working the ore of their Eldorado South mine..... A correspondent writes the *Reporter*, January 26, from East Belmont: "There is snow enough on the ground for good sleighing, but warm and pleasant. The Combination mill, the pride of Belmont, would, ere now, have gladdened the ears of the people with the clatter of its forty stamps had it not been for the detention of supplies, caused by the almost impassable state of the roads, but we expect in a very few days to hear the rumble of its machinery, and then look out, not only for 'Belmont bullion,' but for lively times generally. The work on the hoisting works on the mine is progressing as rapidly as the weather will permit, and altogether things begin to look very favorable for the future welfare of Belmont."

Humboldt.—A correspondent writes to the *Register* from Oreana, January 22, that the Montezuma smelting works are in good order. "The smelting furnace has been in constant operation for over four months, reducing near 1,300 tons of ore. It has been drawn out this week temporarily for some little repair. The hands running this furnace hail this vacation with not a little satisfaction, as a four months' campaign of twelve hours each day is more than many of them like. The refining department will meet with no delay, though the intense cold weather has somewhat retarded it in some particulars. Some $18,000 of refined bullion have been shipped within the last month, together with six tons of antimony, for the San Francisco market. On the 1st of January there was on hand at the works over 400 tons of crude bullion; in value $70.000. The company has still on hand a supply of charcoal sufficient for a three months' run. Nevertheless, the charcoal burners are establishing their camps and laying in their "grub" for another summer's campaign in the mountains. They regard this as their last show at the East Range, as before another season the fuel for these works will be coming from the Sierra Nevada. The mine is developing to the utmost satisfaction. The lower levels now being run carry a ledge of solid ore eight feet in thickness. The roads have been horrible, and even on this short haul the works have been reduced on several occasions to less than a week's supply of ore on hand; but the Spence Brothers, who have the contract, have exhibited an energy that will always overcome the most difficult obstacles."

Arizona.

A correspondent writing from Fort Whipple, Dec. 5, to the Philadelphia *Weekly Press*, refers quite enthusiastically to the mineral wealth of this Territory. He says: Gov. McCormick sets down the metalliferous region of Arizona at 19,000 square miles, or 12,160,000 acres. This vast extent, it must be borne in mind, is *covered* with every variety of metal, and is not merely a territory where it is possible to find it. Perhaps there is no single copper mine in the world that equals in richness the famous Pino Altos in Southwestern New Mexico. Pima county, near where it joins New Mexico, is surprisingly rich in copper, though it is not found in the virgin state in which it is so abundant in the great mine named. Much of the Pima ore has yielded 90 per cent. of pure copper. Fine specimens of this, chiefly red oxides and gray sulphurets, were shown to us in Prescott. As might be expected, from the geographical location, the silver veins of Pima are among the richest on the continent. Some of the mines in the Santa Cruz valley have been worked, like those of Sonora adjoining, for centuries. Of late years the yield of those silver mines has not been large. This, however, has been the result of continued mismanagement, and the hostile incursions of the Indians, rather than any defect in the quantity or quality of the ore, or the facilities for extracting and working the same. The silver ores of this region are chiefly argentiferous galena, well adapted for smelting. Some of the mines at a depth have a silver copper glance, iodide of silver, and a mineral containing quicksilver. On the Gila river, twenty miles above its junction with the Colorado, gold was discovered in 1858, and produced an excitement peculiar to gold countries, which resulted in the founding of Gila "City." This discovery gave an impetus to emigration, which, from 1862, began to settle along the Colorado. This population was principally from California and Sonora, and, as might be expected, the country around these settlements was thoroughly prospected. The result was the discovery of the rich placers at Chimney Peak, twenty miles above Fort Yuma. The prospectors moved still farther up, and opened the rich gulch diggings around La Paz, ninety miles above the Chimney Peak. The men who prospect a country scarcely ever reap the fruits of their discoveries. They are generally poor, and know but little about mining as a science. They form companies and locate their claims, but the end is that men of capital come in with the ability to work; the original claimants, confident of more successful prospects, sell out, and the harvest is reaped by the purchaser. Since 1862 a large number of silver and copper mines have been discovered adjacent to the river, and the mining region, bordering on the river, divided into the districts of Yuma, Castle Dome, Silver, Eureka, Weaver, Chimehuiva and La Paz. But few of the mines in the districts named are successfully worked. In the first place, there is a great lack of the first essential—capital—and in the second, half the time of the miners is taken up in defending themselves against the Indians. Major Price, commanding at Fort Mohave, has been very successful in his recent scouts after the Indians living near the river, and it is supposed that they will be quiet for some time to come. Higher up the river, and close to Fort Mohave, there are many fine quartz mining districts, in the centre of which has sprung up the promising town of Hardyville. The mines stretching from Mohave to El Dorado canon, a distance of sixty miles, are among the most important in the northern part of the Territory. The ledges are very large. The gold ore pays well, but the silver ores are surpassingly rich. According to Mr. Hardy, they pay as well as the best silver ores of Nevada. Quantities of the silver ore have been shipped to San Francisco at a cost of $30 per ton, and the enterprise is said to have paid well. The mines of the Central Yavapai county are, perhaps, being more thoroughly worked than any in the territory, though this is saying but little for their development. Forty miles north of the Gila, the southern spurs of the Mogollone range rise gradually towards the main mountain. On every slope of these mountains are mines, or rather lodes, of gold, silver and copper. The discovery of gold on the Gila brought in a large number of prospectors, who explored that river and its tributaries to the mountains. This resulted in opening up the rich Placer diggings on Lynx creek, Agua Fria and the Aassayampa. The credit of these valuable discoveries is chiefly due to the intrepid explorers, Captains Walker and Weaver, after whom mining districts have been named. Placer diggings, however, have not paid; the gulches are narrow, and can only be worked profitably by a few men. The constant attacks of the Indians have compelled men to work, for protection, in large parties; the result is that the surface diggings are abandoned, save on the Hassayampa and Walnut Grove, where farms have been taken up, and the settlers are numerous enough to keep back the Indians. Quartz lodes are attracting attention in this vicinity, and mills have been erected at several points which are already paying, despite the high price of labor. Noyes and Curtiss have here a No. 1 ten stamp mill, working free gold at the Mupqua mine on the Hassayampa; close to it they are opening the Chase lode, which promises to pay well. Gray & Co. have a large mill at the Sterling mine, six miles above Prescott, on Granite creek. Of late they have been troubled with sulphurets, but men acquainted with the working of this refractory ore are now *en route* to this place from San Francisco. The same company has shown its confidence in the quartz mines by erecting another mill at the Big Bug mine, in the district of the same name. In the Agua Fria district, Colonel Woolsey erected, two years ago, at the Ticonderoga mine, a five stamp mill with a "thunderbolt" crusher. Since then, six steam arastras have been attached, and the working of the whole has been highly satisfactory. Unfortunately for the greater success of this mill, the miners mistook a branch for the main ledge, and followed it till it ran out. Work has been begun on the main ledge, which is said to average about $80 of free gold per ton. On the Upper Lynx creek Messrs. Reid, Tyson & Co. have built a ten stamp mill, with arastras attached, for working free gold. The mine paid well, but before it had been in operation long it ran into sulphurets, and as no person in this section understood the working of them, the mill has been temporarily idle. There is another fine mill on Lynx creek erected by Mr. Lamson, near a fine ledge. As the machinery is not complete, the mill is at present only suitable for crushing, at which it is constantly employed. In the Turkey creek district, or the Bully Bueno mine, there is a twenty stamp mill owned, it is said, by a Philadelphian. Owing to a lack of funds the work has never been completed, and trouble in the company for the present retards what may be made a grand enterprise. At Walnut Grove, Wickenburg and other points, there are mills in successful operation, about which I will write you hereafter. Dr. Parry and Major Calhoun, who have been examining the country around Prescott for the past two weeks, start on the 9th inst. for a grand tour through the mines, accompanied by an escort of the 8th Cavalry.

Big Bug District.—Mr. F. H. Wunderlich, who has lately visited this district, informs us that he has quite a number of men engaged in running a tunnel upon the "Eugenie" lode. Mr. Farrish of San Francisco accompanied Mr. Wunderlich, and expresses himself highly pleased with the looks of the country and the richness of the quartz. The upper or new tunnel of the Eugenie is now run into the ledge a distance of about ninety feet. The ledge is fully six feet thick, and the rock looks better than ever before. The several strata of which the ledge is composed are as follows: Next the foot-wall there are between eighteen inches and two feet of solid quartz, mixed with small, neatly formed sulphurets of copper; next to this strating, there is about the same thickness of decomposed copper-stained rock; then there are fully two feet of solid, bluish rock, which is also well mixed with sulphurets, and which "breaks out" in large, square pieces. We have seen a piece of this sulphuret rock, and we must say that it looked to us as though it would pay well, if properly treated, which it will be as soon as Mr. Kustel arrives .....A drift twenty feet in length, has been run into the "Galena" ledge, at a depth of seventy feet, which opened up a body of beautiful sulphuret ore, four and a half feet in thickness. The sulphurets in this ledge are not quite as small as those in the Eugenie, yet it is generally believed that they are richer in gold and silver. There is a bluish-black rock in this ledge that has assayed as high as $500 to the ton.....Placer mining, on account of an insufficient supply of water, is at a stand still.—*Arizona Miner, Jan. 11th.*

Walker's District.—Poland & Pearson recently worked five tons from the "Spur" lode. The clean-up established the fact that the Spur is a good lode, and will do to tie to. Mr. Pearson, who in company with Messrs. Shelton and Cole, came to town a few days ago, told us that the rock paid well .....McCrackin is hauling rock from the "Pay-Streak," a new ledge.....Watson, Fredericks & Marsh, are taking rock out of the "Shamrock," lode. .....A. French is burrowing in the "Tie-Tie." .....The "Thuderboldt" mill is running upon "Shamrock" and "Tie-Tie" ores.....Some placer mining is being done on the bars of the creek, but there is scarcely enough water for that purpose, or for running the water arastras.

Hassayampa District.—Saturday last, Young & Roddick were down 46 feet upon the "Chance" silver lode. The rock looks first-rate and shows lots of native silver. Joe Young, one of the lucky owners, got, recently, out of nine pounds of rock, nine ounces of amalgam. They have now several pounds of amalgam on hand.....The "Chase" lode continues to yield plenty of rich rock. Work is progressing steadily and the energetic citizens who are having the ledge prospected, Messrs. Noyes & Curtis, are well pleased.....Mr. Reed started the "Sterling" mill on Wednesday evening, upon a small lot of Sterling tailings.....A party of Germans, who have been engagod in placer mining on the Hassayampa, recently struck, while working in the bed of the stream, a large ledge of finely-grained plumosa. We are informed that after manipulating and reducing the ore, the amalgam is worth $5 an ounce. The owners are Colorado men, and, we believe, understand working this kind of ore. We have heard of parties in Prescott getting excited over this matter. All we have learned in regard to it came to us second-handed, but we hope it is all true.

Montana.

A. Barber thus writes to a friend from Argenta, Jan. 23d, concerning the furnaces and mining operations there: "I take this opportunity to give you a few notes concerning matters in this vicinity. The Esler smelting and cupel works are working satisfactorily—working like a charm. Ores are being smelted from several different leads, and all are paying. I was at the furnace a few evenings since, when a 70 pound chunk of nice silver was taken out. To-night or to-morrow, a very large piece will be taken out, as there is 10,000 pounds of rich lead in the charge. Another cupillo is being erected as fast as possible, and it is the intention to add one after another until there are five in the row—the same power for furnishing a blast being adaptable to all. The ditch, water-wheel and wheel-house cost more than the smelter, but the capacity is sufficient for all of them. The second furnace has been let out to contractors for $450, Mr. Esler furnishing the material. The cost of smelting is about $15 per ton, but it is believed that the cost can be reduced the coming summer, and the success of the enterprise is assured beyond a doubt. Wages are $5 per day, currency. The erection of a furnace is not the mysterious, difficult thing it has been represented, and any good mason can erect one after examining this. It is nothing more than a straight chimney with an oval bottom. The lead and silver settle in this oval. An orifice, some three feet from the bottom, serves to draw off the slag during the melting process, and the lead and silver is drawn through the bottom of the furnace, emptying into a cavity in the ground, and there forming a cake. This is the description of a furnace in a nutshell. * *

* * Mr. Esler informs me that his entire expenditures for putting his works in successful operation will not exceed $5,000, and that he has already sufficient metal to cover the entire amount and you know his works have been in operation only a few weeks".....The Virginia City *Democrat*, of Feb. 1st, has the following on the same subject. It says: Mr. Johnson, clerk in the banking house of Nowlan & Weary, of this place, has just returned from a visit to Argenta, bringing with him from that place one hundred pounds of silver belonging to Mr. Esler. The latter gentleman, who deserves much credit for his energy and industry in the development of the mines of Montana, has been engaged during the winter in the erection of a furnace for the smelting and cupelling of his ores, and has in the past two weeks taken out several hundred pounds of silver, and has enough metal yet to cupell to yield him an amount of silver to more than cover all the expenses he has incurred in erecting his works. The process adopted by Mr. Esler is of the simplest character, and is attended with very little expense. Mr. Johnson informs us that Mr. Esler's estimate of the expense necessary to erect a single furnace and put it in running order, is from $2,000 to $2,500. This fact, now well ascertained, is of momentous importance, for it places within the reach of every man who is able to own a piece of property in that district the means whereby to extract the precious metal. Another fact, of no less importance, is that the ore from which Mr. Esler has taken this silver was collected from a dozen different lodes owned by different parties who wanted their property tested, and was given to him upon which to make his experiment. The average yield was about $200 per ton. Mr. Esler can see but little difference in the leads, and thinks they will yield about alike. This practical and simple test which has placed the value of in that section beyond a doubt, has created no little excitement among the property holders there, and quite a number are preparing to erect their funaces without the aid of Eastern capitalists. Let all take hold with a will and determination, and success will be attained..... A Bannack city correspondent of the *Post* writes Jan. 21st: Mining in Beaver Head county is progressing finely for this time of year. Last year six ditches were constructed aroundd Bannack. Many parties here tested their ground by sluicing; results satisfactory. Some are hard up for funds, but few are willing to part with their interest in any of these ditches or their ground, being satisfied that they will do well in the spring and summer. Work will be abundant in the spring, both in placer and lode mining. Parties interested will commence on No. 6, Dacotah, shortly. H. Clark has all the men he can work to advantage on his tunnel. N. E. Woods has his mill running night and day on quartz from the Cherokee and St. Paul. Results are satisfactory. Mr. Wood is about purchasing the discovery claim on the Cherokee which he is working. Brown Morris and Maney own the claims on the St. Paul, from which Mr. Wood is now crushing ore. These gentlemen are not waiting for companies to buy their property, but have developed the same with their own hands. They will pay out little money for labor next spring, and will have up a ten stamp mill of their own. At present they sell their quartz at the mouth of their tunnel.....A Philipsburg correspondent of the *Post* writes under date of Jan. 16th: The mode of tunnelling to test ledges is fast coming into favor in this camp, and by practical men is considered a most favorable omen. Several have been commenced, two running at different angles on the Comanche Hill, one under the Cliff Hill and one upon the St. Louis Mill company's mill site near the central portion of Philipsburg, intended to tap the Cordora lode, and for discovery purposes. The work upon the former is in progress, directed, we are intormed, by Mr. Deidesheimer, and upon the latter by Billy Potterfield, in right good earnest. Many others are in contemplation, but time and space warn me not to mention them in this letter. The St. Louis Mining Company's mill, since the holidays, has not disturbed our peaceful slumbers, as winter, again, has been the drawback. As well might the machinery have been made of glass as iron, after standing idle a week during such weather. But now, as the weather has moderated, the eternal thumping is announced to commence on Monday next. Our Gold District friends are nearly ready to put their new machinery in motion. Very many old quartz men predict that the largest runs and much the largest average runs will be made from the "Cable" rock yet made in the Territory. There are other ledges, however, in that vicinity, containing less "free gold," that prospect equally well; yet none can deny the fact apparent, that so far, "Cable" rock, in quantity coupled with quality, eclipses all former discoveries in Montana. Another mill, I learn, will be placed on the Alexandria lode early the coming spring. This lode has rapidly risen into favor, and recent developments go far to convince quartz men that it is not as rich, but a main vein of the camp. A force of men are now employed to sink a 75 foot shaft, and the future must be consulted before we shall be justified in rendering a final verdict.

Dakota.

A correspondent of the Chicago *Republican* writes a lengthy letter from the new Sweetwater mines, from which we make the following extracts: The first discovery was made upon Willow creek, a tributary of the Sweetwater, fourteen miles northwest of Pacific Springs, and ten miles north of the old South Pass telegraph station. One of the party, Henry S. Redell, Esq., riding along leisurely one day upon his horse, discovered a white boulder lying upon the side of the hill near by, which attracted his attention by its unusual appearance, and which, upon examination, he found to be literally covered with gold. After that he had satisfied himself that his eyes were not deceiving him, and the excitement of the moment, naturally caused by so rich a discovery, had subsided, he began the search for the source from whence this boulder must have its birth, and within a few moments he was richly rewarded by the discovery of the famous Cereso Lode. Out of this mine men have made as high as $130 per day with a hand mortar. Four tons of quartz hauled to Springville, Utah Territory, yielded $28,000—so report says, and I have no reason to doubt it. In three or four cases rock has been pounded in a hand mortar which yielded $10 to the pound of ore. * * * * Some one hundred and fifty leads have been located, all within a small circle of some six by fifteen miles, while the great mineral belt in which the mines are found extends from Fremont's Peak south to the junction of the Grand and Green rivers, a distance of some 300 miles, and in width from 30 to 60 miles. Only the small portion referred to above has been prospected, and that even only run over. Three gulches have been discovered which prospect from three to thirty cents to the pan, with from three to nine feet of pay—no stripping and plenty of water. In the Cereso Gulch they averaged during the fall $30 per day to the hand. Reliable reports which have just reached us, bring the tidings that a very rich gulch has just been struck some 20 miles east of the South Pass, on Wind river waters. The gulch is reported as five miles in length; pay, nine feet, and that all the way down, with plenty of water, and good for from an ounce to $30 per day to the hand. Rich diggings are also reported as just discovered at Devil's Gate, on the Sweetwater, where gold has been found for years, but never before in paying quantities. The best prospects ever obtained in all this region, until within

the last few weeks, were found in the Great Basin of the Sandy's and Sweetwater. Near the base of Fremont's Peak, in the New Pacific District, prospects are good that very rich placer mines will be discovered during the spring and early in the summer. As but very little prospecting has, as yet, been done, we know but little of what these hills and valleys contain. An immense amount of work has and will be done upon the different mines during the winter, when we take into the account the difficulty which has been encountered in the way of obtaining tools and materials with which to work. The Bridge company are down 25 feet, with their shaft, 5 feet by 8, on their location upon the Atlantic. The Hope company, upon the same mine, are running an open cut 15 feet wide, and have struck the lode at the depth of 25 feet. Ore from both of these mines at that depth prospects very rich, and growing rich as they go down. The shaft on the Col. Mann is 30 feet in depth; on the Jim Crow, 30 feet; King Solomon, 15 feet; Miner's Delight, 15 feet; Almira, 20 feet; Mineral Star, 14 feet; the Great Republic has a natural development of 25 feet; the Pacific one of 25 feet. All of these, and the many other mines upon which more or less work is being done, all grow richer as they are developed. Four mining districts have been organized, viz.: Shoshone, California, Mill and Pacific. Three cities are already laid out—South Pass, in the Shoshone District; Hamilton, in the California District; and Pacific City, in the Pacific District. About six hundred men and six women now occupy this section, so wonderfully rich in gold, silver, copper, iron, coal, coal oil, and mineral springs, not to speak of the magnificent and fertile valleys of Wind river, the Pass Agiles, Sweetwater and Green rivers (Valley of the Lakes), which, for fertility of soil, grandness of scenery, salubrity of climate, as well as in point of location, near the great thoroughfare across the continent, the Pacific railroad; and then again for timber and water, and last, but not least, their mineral wealth and home market—all combine to make this the spot which never was and never will be surpassed in this country or in the world. The Pacific railroad will pass within fifteen miles of the mines, and be completed as far as this point by the 1st of August, this year. The telegraph is within nine miles, and will be completed to the towns as soon as the weather will permit. Wells, Fargo & Co. will put on a double daily line of six-horse coaches from Cheyenne City *via* the mines to Salt Lake and Austin, as soon as the weather and snow upon the summit will allow them to pass over. With these advantages what will this country not become? The first number of the *Sweetwater Miner*, a tri-weekly newspaper, will be issued on the 1st of February, by Warren & Hazard, formerly of the Salt Lake *Vidette*. Banks, express and other offices, wholesale and retail stores, and commission warehouses, are already in process of construction, in order to be ready for the spring trade. The distance from the new mines to Cheyenne *via* the Lander road, Bridger's Pass and Coach road, is 280 miles. By the Cannon, Whisky Gap, North Platte and Pass Creek (a new route), 180 miles. To Mail Road, at Ham's Fork (South Bend), 105 miles. To Salt Lake City, 260 miles. To Fort Bridger, 135 miles. To Taylor's Bridge, on Snake river, *via* Lander Road, 175 miles. To Fort Laramie 301 miles. Green River Valley (Valley of the Lakes, and the Garden of Eden of the American continent), 25 miles. Wind River Valley, 35 miles. Valley of the Passagies, 25 miles. Sweetwater Valley, 15 miles. In passing from Cheyenne to the mines, we cross the great coal and iron belts, which extend from the western base of the Big Horn mountains westerly to Green river, and thence to Salt Lake, and southerly to Mexico. This entire region abounds in veins of coal from 5 to 11 feet in thickness, and of a superior quality, resembling cannel coal, now bituminous, having the hardness of anthracite coal, resembling it in appearance, and ranking next to it. There is probably not less than 10,000 square miles of this lignite formation, and that, too, in a region of country where there is a great scarcity of wood, and also where are found positive evidences of as fine iron mines as any in the world. Immense deposits of iron are found upon Boulder Creek, and huge mountains of it in the Iron Mountain range. In fact, so far as outward indications can be taken as proof, there is not less than an area of 100 miles square, covered with beds of rich iron ore. West of these we find a silver belt, rich in the precious metal so far as has been tested. The extent of this silver section is not known, only that indications show an extent of leads about ten to twelve miles in length by three in width. Specimens of silver ore from this section, worked in Nevada, have given wonderful results. But this section, like all of this grand mineral region, is as yet almost entirely unknown. West of this silver belt we find the Sweetwater gold mines, rich and extensive. Provisions of all kinds are already scarce, and will be more so before spring. Flour, $20 per 100 lbs., and none to be had. Pork, 75c.; beef, 30c.; bacon, $1; tea, $5; coffee, 75c.; sugar, 75c.; potatoes, $9; butter, $1; cheese, 50c. Axes, $6; picks, $7 50; glass, $1 per pane; boots, $15a$24; nails, $1 per lb. Lumber, $100; shingles, $10. No tools, powder, fuse, or anything else with which to work the mines. There are but two little shops or sort of stores in all this region. Clothing, blankets, &c., are about four times as high as at Salt Lake City, and there double the price of almost any other western city. * * * * With the coming spring there will be a grand rush for this new "49" of the Rocky Mountains. Let every one come prepared with provisions, clothing and tools to last them until the middle of July. Those coming from the West and Northwest must get their outfit of horses, provisions, &c., at Salt Lake City. Montana and Idaho must outfit at home, while those from the East have the choice of Cheyenne or the terminus of the railroad, which will probably be some seventy miles west of there, and within 110 miles of the mines. Horses and mules will find no trouble in reaching the mines after the 1st of May; before that it may be doubtful. There are fine chances here for business men—live, energetic, straightforward, accommodating men—who can see beyond the present penny to dollars in the future.

The Sweetwater mines are situated northeast of the old emigrant road which leads through South pass and by the Pacific springs, and are on the eastern slope of the Rocky mountains; and thus far only one ledge had been observed to cross the divide to the western slope of the mountains. The mines are 260 miles northeast from Salt Lake city; 105 miles from the stage road via Green river; 280 miles from Cheyenne city via the Lander road and Fort Halleck; and 180 from Cheyenne city via the North Platte, Pass creek, and railroad survey. The line of Pacific railroad is only twenty-five miles south of the mines, and it is believed that it will cross the summit of the mountains before the close of next August. The telegraph is within nine miles of the mines, and will extend through them as soon as practicable. Persons traveling from California, Nevada and Arizona will find the best route to the mines to be by the way of Salt Lake city, Fort Bridger, Green river, Oregon Springs and Pacific city. Those going from Oregon and from Washington, Idaho and Montana territories, should take the stage road to Taylor's bridge on Snake river and thence via the Lander road to the mines. On the 1st of January there were four feet of snow in the mines, though in the Wind river valley, thirty-five miles north, there was scarcely any, and the prospectors placed their stock there to winter. There are good wagon roads passing directly through the section, where the mines are located.

Idaho.

During the month of January there was shipped from and produced in Owyhee bullion to the value of $150,000.....The Ilver City *Avalanche*, of Feb. 1, has the subjoined news from the mines in its vicinity: Work is going on lively at the Oro Fino. In the south drift the ledge is now five feet in width and getting richer. Owing to the want of shoes and dies the Morning Star mill is not running at present, but the Cosmos mill is constantly running on Oro Fino ore.....Work is being vigorously pushed forward night and day on the Ida Elmore, and ore of marvelous richness is being taken out. It is estimated that each load of quartz (weighing from nine to ten thousand pounds) hauled from this mine yields over one thousand dollars, which will not astonish any one who takes the trouble to examine the ore at the mine or mill, as gold can be plainly seen in almost any portion of the rock—besides, it contains large quantities of silver. .....We noticed this week in the ore house at the Golden Chariot mine a pile of ore all sparkling with gold and streaked with silver. Work goes on night and day, and the ledge appears to become richer the deeper it is worked .....The Rapidan is being worked, as is also the Omega, two ledges that were discovered in the fall. The boys are getting ore rich in gold and silver from both these mines, and are confident that they will take therefrom all the money they want.....Cope & Co. are busily engaged in prosecuting work on the Potosi, just back of town. In the tunnel, about eighty feet from its mouth, a shaft has been sunk to a depth of about fifty-four feet on the ledge, and at pretent a drift is being run northward from the bottom of the shaft. Considerable rich ore has been taken out of the Potosi, but, judging from the way in which it has developed from the surface downwards, it would be much more profitable to its owners if worked to a greater depth, which we are told will be done early next spring.....The Calaveras mine prospects well, and we understand that preparations are being made to work it on an extensive scale.....A number of tons of ore have been worked from the Allison mine. We are not at liberty to state the exact yield, but enough is known to justify Dave Meek in buying up all the stock that is for sale, for which he pays a good price, cash down .....It is to be regretted that the report has gone forth that the Iowa company, in Flint, has failed. It is true that the company has not been as successful in their operations as could have been desired. As is well known, a large amount of money was expended during the past summer in the construction of a mill. New machinery was introduced, which at first presaged success, but which, after thorough and repeated trials, has proved a failure; so that experimenting with the Dodge Crusher, combined with poor management, has produced a result disastrous to the company. But nothing has transpired, as yet, to warrant the assertion of a failure, as regards future operations, &c.; although it is true that parties here have levied attachments amounting to $20,000 on the mill and other property. We learn from reliable sources that the financial embarrassments of the company will soon be relieved, the Dodge Crusher taken out of the mill, and stamps put in its place; which being done, instead of a failure, we shall have the pleasure of proclaiming ultimately the success of the Iowa company's operations in Flint.

The Owyhee *Avalanche*, of Jan. 25th, says: Wells, Fargo & Co. have shipped below, per Railroad stage, during the present month, to date, a tun and a half of bullion, valued at $110,000. This is the exclusive product of Owyhee—pretty good for the middle of winter.

Utah.

An assay of rich galena, procured from a mine in the Wasatch mountains, says the Austin *Reveille*, exceeded the rate of $180 per ton. The vein from which the galena was produced is represented to be of large size, and contains a variety of ore, in which there are small strata of fahlerz, very rich in silver. Those mountains abound in mineral wealth, and it is highly probable that Utah will yet become an important mining region.

British Columbia.

A letter from Cariboo, dated December 14th, says: On Mosquito and Red Gulches everything looks lovely. Several claims are still being worked, notwithstanding the lateness of the season and some of them yielding large returns. The Minnehaha washed up this week a trifle over 200 ounces, and seems to be improving in richness every day. The Big Lead, Willow and Joint Companies, all on Mosquito Gulch, are paying largely. The Ophir, Discovery, Tip-and-Slasher and Catch-it-if-you-can companies on Red Gulch, are also doing well. Several other companies are taking out about wages, and others prospecting. A letter from Big Bend says the snow was about 2½ feet deep on French creek. The claims had all ceased washing. In the Black Hawk and Blue Nose they were drifting. The Daggett Company had stopped working on the creek, and were drifting into the bank, where they were getting 2 ounces a day to the hand. The Wigdam company were drifting, and were taking out from 1½ to 2 ounces a day to the hand. The Discovery company were taking out wages. There are about sixty men wintering on the two creeks. The *Colonist* says: We understand that San Francisco capitalists propose taking a one-half interest in this lead and to furnish all the capital necessary to open it. The specimens sent below for assay astonish the parties to whom they are submitted, and awaken an interest in the mining resources of British Columbia which will eventuate in good. We are told that few specimens of ore as rich as those from Cherry Creek have ever been brought to San Francisco.

Virginia City and the Comstock Lode Mines

SAN FRANCISCO, Wednesday, Jan. 15, 1868.

Virginia City, Nevada, is certainly one of the most characteristic places of this remarkable region. If my readers will imagine a mountain-side of the Sierras without a tree, amid grand hills, where nothing green can be seen for fifty miles, with deep, bare valleys, and in the distance, beyond Carson River, great blue mountain-peaks capped with snow, and on this mighty mountain-slope, a little low-built town—say of 15,000 inhabitants, with brown, wooden houses and a few brick stores, and in its streets a throng and business almost like that of Broadway, they will have a feeble impression of the "Silver City." It is more than a hundred miles away from the first link with civilization, and yet coaches, wagons, and the stream of "mountain-schooners" pour into it unceasingly; these last are enormous freight vans, drawn by twelve or fifteen mules, which carry everything—pianos, glass, fruit from every region, silks, machinery, clothing, wines, furniture, and all that luxury needs or money purchases. One of the characteristic features of the place, which I shall never forget, is the pensive, patient form of the Chinaman, slowly driving his still more patient donkey, and selling his dollar's worth of wood—yet never crying his wares or soliciting a purchaser. The town, with parallel streets, is built on the mines, and is already falling into the cavities, which fact seems to trouble the citizens very little. About the city, and in it, are the tall chimneys and the gray stone buildings of the famous mining companies, whose names are known through the world. The town is cut off from the pleasures, the art, and the civilization of the outside world. It makes up for it with the excitements of the stock market. All day long the streets boil over with stock speculation. It is a most striking contrast; above, the clear blue sky, like that of the high Alps with its infinite depths; on a few steps, the loneliness of a desert; around, the vast solitudes and mighty snow-peaks of the Sierras; and below, men rushing to and fro with wild excitement to speculate by telegraph in the mining market of San Francisco. It is like the sudden transference of the William street gold room to the top of Mount Rigi. Here hundreds of thousands are won and lost in a day. Here cunning directors are occupied in "freezing out" unfortunate stockholders thousands of miles away, or are forcing up stocks, whose worthlessness they know, to incredible values, or are preparing new reports and statements to beguile the unhappy public. A single day will alter the apparent value of the property here by millions of dollars. At night Virginia City is ablaze with lights of liquor saloons, and there being, I suppose, little society in the place, these haunts are thronged with men. I did not, however, happen to see any hard drinking or drunkenness. The only women visible were evidently women of bad character. I had much conversation with some of the clergymen and others, who were seeking to benefit the morals of the town. The great thing needed is evidently a refined and virtuous female society. Such a throng of men, thrown together in a wild pursuit of gain, without family life or the influence of superior women, must deteriorate and injure one another. Life has no attractions to offer here but the intense struggle for gold, the excitements of gambling and the pleasures of low vice. So demoralizing is the place that men who have been here many years lose all taste for the higher pleasures of civilization or for family life, and find any other pursuits dull and insipid. There are, it is true, families in the town of much refinement and character, but they have no perceptible influence on the mass. As a means of contending with the temptations of hard drinking, I wonder that the religious community of Virginia City have not tried the simple experiment which has worked so much good in New York—the founding of social resorts where liquors are not sold and good reading is supplied, such as our coffee and reading rooms. Many a young man might be saved by them. How much there are needed through the mining regions of California truly Christian and humane missionaries; men of tact and talent, without the stiffness of the profession, with knowledge of the world and warm hearts, who could go among these rough or busy men, and offer them what they seldom receive, a manly sympathy. California, as I have often said, is not what we in the East consider it, a country alone of success and fortune. There is many a man in the battle of life here who falls defeated and alone, or who lays wounded and broken behind the successful march, or creeps away to die unnoticed. A man of religion or humanity coming among the miners and offering a heart full of sympathy, would find so many hidden wounds—so much disappointment—so many unseen struggles for a better life. The hearts of these rough men would open at once to any one inspired by religion and sympathy. It is a wonder to me that the churches have done so little for a population of such intelligence as this and of such needs.

THE SILVER MINES.

The Comstock Lode, on which the silver mines of Virginia City and Gold Hill are situated, is probably the most productive mineral vein in the world. It is only a strip of land three miles long by 600 yards wide, yet it yields $12,000,000 annually. Five thousand men are employed on it during the year, and the produce for each workman is about $2,000 per annum—an average of production, probably equalled on no other mineral vein in the world. In 1865 there were 46 companies working it, who owned 22,258 feet, and had excavated about 28 miles of tunnels and drifts, and 5 3-4 miles of shafts, wings and inclines, with some 33 miles more of chimneys, &c. The longest tunnel made is the Latrobe—3,200 feet; the greatest depth penetrated is by the Gould & Curry, 821 feet. These companies have 44 hoisting and pumping engines, aggregating more than 1,500 horse-power; 76 mills are employed in reducing the ore, with an aggregate capacity for crushing 1,800 tons daily. They consume annually about 32,265 cords of wood, at a cost of about $16 per cord. Their wood and timber together are estimated to cost annually about $1,000,000. Mount Davidson, in which this famous vein occurs, is a barren mountain,* mainly of granite, though serpentine, quartz, synite, gneiss and talcose and calcareous rocks enter into its composition. Its summit is 7,827 feet above the sea level, while the vein itself and Virginia City are about 6,200 feet. The lode is a regular fissure vein, and subject to the usual displacements and faults of mineral veins, which throw such an uncertainty over all mining operations. At one place it may be entirely interrupted by trap-dykes or other rocks, or the wall-rock may be imbeded in it or other matter destitute of ore. The ore, too, is often deposited in "chimneys," which run lengthways with the vein, and thus carry the rich deposits out of one property into another; so that the unfortunate company which had been gathering their hundreds of thousands one month may be entirely without income the next; and yet, after penetrating deeper, they may again strike on even a richer deposit, or they may labor for years without meeting with any. I visited, during my stay in Virginia City, the Savage Mine, as being one of the safest and best conducted, and also went over the works of the Gould & Curry, Hale & Norcross, and Empire. In the Savage, we were placed on a platform in a shaft, and with a warning from my conductor, we disappeared as if by magic from the cheerful surface of the world, and descended with frightful rapidity some 600 feet into the bowels of the mountain, getting wild glimpses as we passed of what seemed dark caverns, with lights gleaming and mysterious-looking forms wielding the pick-axe—which were the various levels, with their workmen—until we landed quickly near the bottom. These steam-worked shafts and platforms, however, seem very dangerous things, and I hear of constant horrible accidents in them. It was remarkable how dry and commodious the various wings and levels and galleries were in this mine. My guide took fragments from each rock as we groped around the mine, and gave estimates of its value with perfect confidence. "This will pay $40 a ton; this, $15; this, $80; this, $500; and this, $2,000;" while all I could discern was a more or less dark shade of the sulphurets. He says (what I hear everywhere) that the companies now are careful not to commit the error of the Gould & Curry, and bring all their best ores at once to the mill; but they mix them and so average their product. They all are working with far greater economy than they used to; and when a branch of the Pacific road touches Virginia City they hope to bring down their expense for fuel (now $15 a cord) and for lumber (now $45 per thousand) at least one-half. My guide—a very intelligent foreman who has risen from the workmen—says that the miners are constantly investing their savings in one, two or three of the shares of these companies, and, knowing the precise condition of their own mines, they often make large sums. The cost of reducing the ore in the Savage was about $16 per ton, and the yield averages $44. In 1866, this mine alone produced 30,653 tons of ore, and reduced 20,535—valued at $1,303,852. During the twenty-six months after they began their works (April, 1863), they produced bullion valued at $3,600,709, and paid out in dividends over $800,000. During the first six months of 1867 the mine produced $1,815,000 of bullion against $711,553 in 1866, and divided $750 per share in the same period, or $600,000 against no dividend in 1866. Its shares were worth this summer about $4,700 per foot. The general opinion in the other mines seemed to be, that this company had ore enough in sight to pay large dividends till August, 1868. Yet, no sane mortal on the Eastern coast should think of investing in this or any other California or Nevada mine on the strength of such facts. Indeed, the more I see of mines and mining operators on this coast, the more I wonder that Eastern capital can be directed to them with any confidence or reasonable hope. When a given mining stock is pre-

* In Story county, Nevada.

sented to investors in New York or New England, no one can possibly say how much real value it represents. It may all exist in imagination, or it may represent a *bona fide* mining claim; but what its value will be a month or a year hence no mortal can predict. It may be even the best existing silver mining stock on the Pacific coast, and yet in three months not be worth one-half its present price. Every superintendent to whom I spoke in the Comstock mines said to me that he could not possibly predict what their product would be after a twelvemonth; it might be tenfold their present; it might be nothing. The business is the most uncertain imaginable. It is said that the hills about Virginia City could be covered with the silver dollars uselessly wasted by "Eastern" investors and speculators in those mines. Then mining stocks on this coast have fallen to a large degree into the hands of the most unscrupulous gamblers. No such sharpers exist in the world as deal in mining stock speculations in California and Nevada. Beside them Wall street itself is rural and moral. Many of them have now large individual and banking capital to back them. They can falsely reduce values, and purposely diminish productions, till they can lay assessments and "freeze out" the unhappy stockholders, and then buy in themselves; or they can produce extravagantly a short time and "coral" a stock till it rises to fabulous prices and then sell out, leaving the unfortunate public the owner of a worthless property. The general rumor in California accuses the Bank of California, or its managers, of furthering these unprincipled speculations. But while even the occasional prizes of silver mining remain as they do on this coast, there will always be investors and speculators. Thus, take such fortune as this: The Empire Mining Company was organized in Virginia City on March 7, 1863. On November 30, 1864, they had crushed about 25,000 tons of ore, and had received from it in bullion $1,043,720. *No capital stock was ever paid in*, though it was valued (in 1864) at a million; no assessment had ever been laid, and the mine had paid all expenses, beside paying the owners $308,000 above all costs and charges. Its dividends in 1865 amounted to $120,000. The property, which had cost its owners nothing, was at one time worth $10,000 a foot. In 1866 it had fallen to $1,000; it is now $180 a share, or $1,800 a foot. The fluctuations in some of these mining stocks have been marvelous; thus, Gould & Curry was worth in 1859 $3 a foot; in eight months it rose to $600; in less than two years it rose to $5,000, and reached once, we think, $7,000. It is now worth about $700. This company alone has taken out $14,000,000 worth of bullion, and has paid over $4,000,000 in dividends. There seemed to be very little doing in its works during my visit. The mine may, however, yet strike some fresh deposit, and its value rise again. Hale & Norcross again has risen in a single year (1865–'66) from $150 to $1,275 per foot; it is now $3,250. This mine worked four years without discovering any ore of value, and expended $350,000 without apparent result. In 1866 it struck pay-ore, and produced $736,394 in bullion in eight months. During the first six months of 1867 it divided $290,000 to its stockholders, and is now one of the most profitable mines on the Comstock lode. There was a great increase in the product of many of these Comstock mines during 1867. Thus tweve of the most important produced, in the first half of 1866, an aggregate value of bullion of $4,926,707; in 1867, in a similar period, their product was $7,043,343. Their market value has increased also in a striking manner. The stocks of fifteen leading companies were worth, on July 1, 1866, $5,739,780; on July 1, 1867, they were worth $13,683,640. This increase of value is partly due to good luck, but partly to greater economy of working. It is said that nearly one-fourth of all the bullion received from Nevada during the past six months has been collected from the work of the mills. The entire canyon through which the tailings and waste from the mills about Virginia City and Gold Hill flow to Carson River, has been flumed for several miles. The bottom of the flume is covered with blankets, which are changed every four or eight hours to collect the material collected on them. This refuse and waste is said to be worked at a higher profit than some of the original ores. The whole yield of the mines on the Comstock lode from 1859 to 1867, is estimated at $66,000,000, or about $44 to the ton of ore. The whole yield for Nevada for 1867 is estimated at $19,000,000, or say $17,500,000 for these mines. The ores of the Comstock mines are generally black and gray sulphurets of silver: occasionally native silver is found. Combined with the ore are sulphurets in small quantities of iron, lead, antimony, copper, &c. The silver has gold also associated with it. The ores are treated by simple crushing and amalgamating. The great instrument for amalgamating is the pan, of which there are several kinds in use. It is generally a cast-iron vessel two feet deep, and from two to seven feet in diameter. A shaft rises through it, turned by steam or water, and to it are fastened pieces of iron, which are made to run over the movable iron bottom and grind the pulp. Some have chambers at the bottom for steam, to keep the pulp at a temperature of 200 degress. Into the pan is put a quantity of ore with salt, iron pyrites, quicksilver, and enough water to make mud. The great object of the "muller," or grinder, is to grind thoroughly the material and to bring all the particles in contact with the quicksilver. The pan is worked about three hours and a half, and then water is run into the pulp to render it liquid enough to flow off through a valve in the bottom, into the "agitator" or "separator;" as it flows off or runs over, it forms a genuine *silver mud*, in which the traveller has the satisfaction of wading for the first time in his life. In the separator, pulp is mixed with a large quantity of water, and by an arrangement of discharging openings, is gradually strained and relieved of its earthly particles, until nothing but pyrites and liquid amalgam are left. The amalgam is drawn off from the bottom, and is washed in clear water and dried with flannel. It is finally strained through thick conical bags of canvas, which are beaten with sticks to drain them thoroughly. The hard dry amalgam is finally carried to the assay office, where the mercury is separated by exposing it to red heat in a cast-iron cylindrical retort. The mercury is vaporized, and then condensed by a stream of cold water in a "Liebig Condenser." The silver remaining is broken up and melted in plumbago crucibles, and cast into "bricks" or ingots of silver, which are assayed, valued and marked accordingly. C. L. B.

New York Times.

Method of Preserving Meat.

The necessity of some plan for preserving meat has long been felt. Hence it is that every plan, as soon as announced, is seized by the anxious public. If we may believe late reports from London, this desire is at last soon to be gratified, and in a manner which will leave nothing desirable unaccomplished. It seems that Professor Gamgee, President of the Albert Veterinary College of London, author of several works upon the cattle plague, and a recognized authority in such matters, discovered a new process for preserving meats, which he has patented in Europe and America. The process is simple and quite inexpensive. The animal, when practicable, is caused to inhale carbonic (oxide) gas. Before it is quite insensible it is bled in the usual way. When dressed the carcass is suspended in an air-tight receiver, the air exhausted, and the receiver filled with carbonic oxide gas; a small quantity of sulphurous acid gas is also added. After remaining here for from 24 to 48 hours, meat may be removed, and hung in a dry atmosphere; it will keep for one, two, or three months, or longer, with no perceptible change in taste or appearance. The tests of the method thus far applied have been attended with success. Beef killed in London in March last was sent to New York in June, and as late as the middle of July was shown to a prominent butcher in Fulton market, who did not discover that it was other than ordinary beef, and expressed the opinion that it had probably been killed about two days. Mutton killed in London last July, and sent to this city soon after, is now perfectly fresh, and one piece of beef kept for ten days in a can surrounded by water at a temperature of 90 to 100 degrees, came out perfectly fresh. The process, in the opinion of eminent chemists, does not injure the meat in the least, which is an advantage very difficult of attainment, even in the case of transportation of live stock, which is liable to the bad effects of confinement and the length of the journey. Among the beneficial results of the adoption of this scheme would be a better supply in our markets of wholesome meat and at a desirably cheaper rate. It is expected that Prof. Gamgee will soon visit this country for the purpose of inaugurating his project.

MARKET REVIEW.

Gold and Silver Stocks are quiet, and the market is weak. Montana has declined from last week's advance, and now sells at 50@55c.; N. Y. Gold has also declined, selling at 80c.; Quartz Hill, also to $1 50@1 55; Smith & Parmelee to $2 70@2 90; American Flag to 80c.; Consolidated Gregory to $4 50; Edge Hill is stronger at $3 30; Corydon also at 43c. At the board the following were the quotations this afternoon:

	Bid.	Asked.		Bid.	Asked.
Alameda Silver	1 00	1 15	La Crosse Gold	— 66	71
American Flag	— 80	85	Liberty Gold	— 4	5
Atlantic and Pacific	— 65	—	Manhattan Silver	150 00	175 00
Bates & Baxter Gold	— —	75	Midas Silver	— —	80
Benton Gold	— 35	45	Montana Gold	— 50	52
Black Hawk G	— —	6 00	New York	— 79	85
Bobtail Gold	1 00	2 00	New York & Eld'o	— —	1 75
Bullion Consolidated	— —	1 00	Nye Gold	— 3	4
Columbian G. & S.	— 3	8	Owyhee Mining	15 00	— —
Combination Silver	50 00	65 00	Ophir Gold	— —	3 00
Consolidated Gregory	4 40	4 50	People's G. & S. of Cal	— —	30
Corydon Gold	42	44	Quartz Hill	1 45	1 50
Edgehill Mining	3 25	3 30	Reynolds Gold	— —	— 5
Gold Hill	— —	4 00	Rocky Mountain Gold	— 25	31
Gunnell Gold	1 05	1 20	Smith& Parmelee Gold	2 95	3 00
Gunnell Union	— —	40	Sensenderfer	— —	8 00
H'n G & S. bs	— —	92	Symonds Fork Gold	— —	1 00
Harmon G. & S. bs	— —	3 00	Texas Gold	— —	— 12
Holman	— 6	10	Twin Riv. Sil	— —	75 00
Hope Gold	— 16	20	Vanderburg G	— —	75
Kipp & Buell Gold	— —	40			

Copper Stocks.—Davidson is the only stock that attracts much attention. Sales are reported to-day at 51. Quotations range:

	Bid.	Ask'd.		Bid.	Ask'd.
Caledonia C	— —	10 00	Hilton	— —	1 00
Canada	— —	— 50	Minnesota	3 50	—
Davidson	51	52	Ogima	2 50	— —
Gardiner Hill	— —	1 50	Rockland	— —	6 50

Petroleum Stocks continue to command moderate attention, Buchanan Farm selling at 41 and United States at $2 00.

	Bid.	Ask'd.		Bid.	Ask'd.
Bennehoff Run	1 75	2 00	N. Y. and Alleghany	2 00	3 00
Brevoort	....	35	Fit Hole Creek	90	1 20
Buchanan Farm	40	41	Rathbone Oil Tract Co	....	....
Central	35	70	Rynd Farm	....	15
Clinton Oil	75	1 10	United Pet. Farms	....	12
Manhattan	....	10	United States	2 00	2 10
National	....	3 00	Union	1 25	—

Miscellaneous Stocks.—Del. & Hudson Canal, 146@147; Quicksilver Mining, 24; New York Central, 129⅜; Erie, 68⅛; Reading, 93⅛; Michigan Southern, 91⅛; Pittsburgh, 94⅞; Northwestern, 59⅞; Northwestern Pref., 73¼; Rock Island, 97⅛; Fort Wayne, 100⅛; Ohio & Mississippi Certificates, 31⅛; Pacific Mail, 109¾; Western Union Telegraph, 34; Adams' Express, 74@74⅛; American, 70; United States, 73@73⅛; Wells, Fargo & Co., 40½@41; Merchants' Union, 35 per cent., 34¼@35.

Government Stocks are firm and are thus quoted:

U. S. 6s, 1881, reg	111⅛@ —
U. S. 6s, 1881, coupon	111⅜@112
U. S. 5-20s, 1862, regular	108 @108¼
U. S. 5-20s, 1862, coupon	111¼@111½
U. S. 5-20s, 1864, coupon	108¾@109
U. S. 5-20s, 1865, coupon	109⅜@109¾
U. S. 5-20s, July, 1865, coupon	107¾@108
U. S. 5-20s, July, 1867, coupon	108¼@108½
U. S. 10-40s, reg	105⅜@105½
U. S. 10-40s, coupon	101¾@102
U. S. 7-30s, June, large	107½@107⅝
U. S. 7-30s, July, large	107½@107⅝

Foreign Exchange is very firm. There is a great scarcity of bills, and quite an active demand from remitters. Drawers decline business at rates not admitting of the bills being covered by bars or specie. Leading drawers quote 110@110⅛ for 60 days' sterling, but occasional transactions are reported 1-16 to ⅛ per cent. below these rates:

London, (prime bankers')60 days'	109⅞@110
London, (prime bankers') sight	110⅛@110¼
London, prime commercial	— —
Paris, (bankers') long	5.15 @ 5.13¾
Paris, (bankers') short	5.12½@ 5.11½
Antwerp	5.17½@5.15
Swiss	5.7⅛1@5.15
Hamburg (bankers')	36 @36½
Amsterdam (bankers')	41¼@ —
Frankfort (bankers')	41 @41⅛
Bremen (bankers')	70½@ —
Berlin (bankers')	72—@ —

Gold—Has been stronger, in sympathy with the firmness of exchange and the prospect of a considerable shipment of specie to-morrow. At 140¼ there are free buyers, and at 140¾ ready sellers; so that the price has ranged at about 140⅜ to-day.

The large demand for customs duties, which for some days has averaged over half a million per day, is diminishing the supply perceptibly, and loans are made now at 3@4 per cent. for carrying.

Money is rather more active, but rates continue at 4@5 per cent. Discounts remain at 6@7 per cent. for prime paper.

American silver is very dull at 7@8 cents below the price of gold. Mexican dollars are selling at 102¼@103¼ in gold.

Copper has been in moderate demand at 23¼@23¾c. for Detroit; 23¼@23⅜ for Portage Lake, and 23@23¼c. for Baltimore. The sales for the week amount to 4 to 500,000 lbs. including 100,000 lbs. Detroit for export to the continent.

Tin is nominal at 24c. for Straits; 23¼ for English, and 27c. for Banca. The London market advanced in the beginning of this month to 90 pct. for Straits.

Spelter is held firmly at 6½@6¾c. gold, for Silesian.

Lead dull at 6⅜@6½c. gold, for ordinary foreign.

Pig Iron.—American is held at $36@37 for No. 1. The market is quiet after the large sales of the last few weeks. Scotch Pig iron nominal at $38@39 for Gleugarnock.

Petroleum is in demand and firmer. We quote: Crude (40@47 gravity) in bulk, per gallon, 11½@12c.; crude (40@47 gravity) in bbls., 17@17½c.; refined, in bond (110 test), prime light straw to white, 24@24½c.; refined, in bond (110 test), standard white, 25@25½c.; refined, in bond (110 test), prime white, 26c.; residuum, per bbl., $3 50.

Receipts for the week ending Feb. 18th	pkgs.	9,286
Exports for the week	galls.	1,206,055
do from Jan. 1st	do	5,757 360
do same time last year	do	3,263,323

THE IRON TRADE.

NEW YORK, Feb. 21, 1868.

Domestic.—The iron market is very quiet this week. There is but little demand for pig, which is probably accounted for by the increase in price during the early part of the week, and which may be noticed in our quotations. The furnaces have, for the most part, now completed their contracts, and the present increase in rates is but their usual action at this time of the year. Scotch pig is scarce, being confined altogether to yard. The sales of the week have all been on private terms, and may be summed up as follows: 2,400 tons American sold for future delivery; 300 tons Scotch; 250 tons new rails; and 125 tons of scrap from vessel. In manufactured iron business has resumed more of its regular course, being more brisk than it has been at any time during the past month. Prices are steady. We note a decline in refined iron.

Foreign.—According to late advices there is a marked improvement in the British iron market, and an encouraging briskness is diffusing its good effects. This change for the better is not special to the iron trade, however, but appears to affect all branches of commerce. Pigs are decidedly firmer. Scotch pigs are struggling upwards.

Weekly Statement of New York Imports.

The following table shows the quantity and value of iron and steel imports at the New York Custom House, for the week ending and including Feb. 14th, 1866:

	QUANTITY.	VALUE.
Chains and Anchors	38	$1,784
Iron, pig, tons	50	900
Iron, other, tons	1,016	28,297
Old Metal	....	2,386
Steel	2,525	30,112
Total value		$63,388

Boston Imports of Pig Iron from January 1 to February 14, 1868.

	1868.	1867.
From Great Britain, tons	1,265	5,643
Coastwise Ports	3,124	404

Lehigh Valley Iron Trade.

The following table shows the amount of Pig Iron transported over the Lehigh Valley Railroad for the week ending Feb. 15, 1868:

From	Tons.	Total
Carbon Iron Co	250	1,580
Lehigh Valley Iron Co	150	1,540
Thomas Iron Co	850	3,640
Lehigh Crane Iron Co	370	1,880
Allentown Iron Co	60	375
Robert Iron Co	170	1,390
Glendon Iron Co	380	2,370
Other shippers	50	552
Total	2,280	13,327

Missouri Iron Trade.

The following tables exhibits the amount of pig iron and iron ore transported by the St. Louis and Iron Mountain R. R. during the year 1867, from Jan. 12th to Dec. 31st:

Pig Iron Received at St. Louis.

From Carondelet	65,420
" Scotts	7,333,420
" Iron Mountain	23,861,700
" Pilot Knob	15,154,900
Total	46,415,520

Shipments of Ore from Iron Mountain.

To St. Louis	10,440,000 for shipment to Indiana.
" Carondelet	48 584,760 for shipment Ohio river.
" Scotts	15,180,000 for smelting.
	74,204,760 lbs.

Shipment of Ore from Pilot Knob.

To St. Louis	3,775,040 lbs.,	for shipment to Indiana.
" Carondelet	16,440,000 "	" O. River.
" Sulphur Springs	4,940,000 "	" "
	25,155'040 lbs.	

Iron Shipments from Liverpool to the United States.

The following are the shipments of Iron from the port of Liverpool for the week ending Feb. 1st, 1868:

IRON, BAR AND BOLT, tons.—Boston, 30; New York, 35; Philadelphia, 6.
IRON, HOOP, tons.—Boston, 18; New Orleans, 1; New York, 9; Philadelphia, 6; Portland, 46.
IRON, SHEET, tons.—New Orleans, 2; New York, 10.
IRON WIRE, tons.—San Francisco, 11.
STEEL, tons.—Boston, 49; New York, 12; Portland, 3.

The following are the shipments of iron and steel to the United States from the same port for the week ending Feb. 8, 1868:

CHAINS AND ANCHORS, tons.—New York, 3; Philadelphia, 2; Portland, 9.
IRON, BAR AND BOLT, tons.—Boston, 115; New York, 30; Portland, 4; San Francisco, 84.
IRON HOOP, tons.—Baltimore, 9; New Orleans, 4; Portland, 1.
IRON NAILS.—New Orleans, 4 casks.
IRON, PIG, tons.—Charleston, 60; New York, 150; San Francisco, 150
IRON, PLATE, tons.—Boston, 14; New York, 4.
IRON, ROD, tons.—Boston, 56.
IRON, SHEET, tons.—Boston, 15; New York, 18.
IRON, WIRE, tons.—New York, 5; Portland, 5; San Francisco, 6.
STEEL, tons.—New York, 78; Philadelphia, 7.

Market Prices.

NEW YORK, Feb. 21, 1868.

DUTY.—Bars, 1 to 1¼c. per lb.; railroad, 60c. per 100 lbs.; boiler and plate, 1¼c. per lb.; sheet, band, hoop and scroll, 1¾ to 1¾c. per lb.; pig, $9 per ton; polished sheet, 3c. per lb. Payable in gold.

Anthracite, No. 1, best.	$36 00@34 00	
" " 2x, fdry,	34 00	35 00
" Grey Forge,	30 00	33 00
Scotch Pig, from yard	40 00	42 00
Charcoal, coal blast	50 00	60 00
Old Wrought sc'p, fm yd.	42 50	— —
" " fm. vel.	39 00	— —
English rails, gold	52 00	53 00
American " at works	75 00	78 00
Old Railroad Iron	45 00@	....
JOBBERS' PRICES.		
Hoops, ¾ per ton	$185 00	
" ¾ " "	155 00	
" ½ " "	145 00	
" ⅜ " "	135 00	
" 1¾ " "	130 00	
" 1¼ to 2 per ton	130 00	
Scroll Iron—¾x14 per ton	170 00	
" 12 "	160 00	
" 10 "	150 00	
" 3-16 "	140 00	
" ¼ "	132 50	
" ⅜x14 "	150 00	
" 12 "	147 50	
" 10 "	142 50	
" 3-16 "	132 50	
" ¼ "	127 50	
" ⅜x14 "	140 00	
" 12 "	137 50	
" 10 "	132 50	
" 3-16 "	127 50	
" ¼ "	125 00	
Swed'h I'n, ord'y sizes, ⅜ to 2 in. sq., per ton	150 00	

Swedish Iron.		
1¼x¾ to ½ and ¾ in sq	155 00	
1¼x¾ to ⅜	160 00	
6 to 12x¾ to 5-8	160 00	
Common Iron		
¾ to 2 in. round and sq	85 00	
Refined Iron.		
¾ to 2 in. r'd and sq	90 00	
1 to 6 in. wide x ¾ to 1 th	90 00	
3¼ and 3½, round and sq	100 00	
Rods—5-8 and 11-16, round & sq., per ton	100 00	
½ and 9-16 round & square	105 00	
7-16, round and square	115 00	
⅜, " "	120 00	
5-16, " "	125 00	
¼, " "	130 00	
3-16, " "	160 00	
Horse Shoe Iron	125 00	
Band—1 to 6 in. x 3-16 to No. 10	125 00	
Ovals and half Rounds.		
¾ to 1¼	120 00	
⅝ & 11-16,	125 00	
½ & 9-16	130 00	
Nail Rods, per lb.	9@10¾	
Norway Shapes	8½	
Spring Steel	10@10½	
Tire " ⅞ to 1¼x¼ & 5-16	10½	
Toe Cork Steel	10½	
Sleigh Shoe Steel	10½	
Plow Steel—6 to 14x1¼ to ⅜	10c	

BOSTON, Feb. 19, 1868.

Swedish—common ass'd	$150@155		Scotch Pig, No. 1		
English—com	85	90	Gartsherrie		$42@43
dc refined	95	100	No. 1, other brands		39 @ 42
do sheet, per lb	6¼@10c.		American, No. 1		40 @ 43
Russia, sheet	13@16c				

PITTSBURGH, Feb. 15, 1868.

There is less activity in the market for crude iron than was noted in our last report. A fair amount of business, however, has been done, and as stocks of leading brands of standard forge descriptions continue light, prices are relatively firm.

Inferior grades of forge irons are accumulating, and not meeting the requirements of forge workers generally, are depressed and sell at irregular rates.

In foundry irons but a light business has been done. Many of the city foundries are either entirely idle or doing a very limited business.

The sales of the various descriptions were:

Anthracite, 1,340 tons; bituminous coal smelted, 1,000 tons; charcoal, 100 tons; Alleghany coke, 200 tons; total, 2,640 tons. Blooms, 50 tons. Last week's sales were 2,452 tons of pig-iron, and 30 tons blooms. Increase this week, 188 tons.

We quote the following sales:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

100 tons Close Gray Common Forge	$36.00—5 mos.
100 tons Open " "	38.00—4 mos.
150 tons " " "	38.50—4 mos.
500 tons Mahoning Valley	36.50—5 mos.
60 tons " "	37.00—4 mos.
60 tons " "	35.00—cash.
30 tons " "	36.00—5 mos.

ANTHRACITE.

50 tons Neutral Forge	private terms.
1000 tons No. 3 Red Short Gorge, said to have been	$33.00—cash.
250 tons White Forge	39.25—4 mos.
40 tons Gray Forge	43.50—5 mos.

ALLEGHANY COKE.

200 tons Alleghany	$37.00—6 mos.

CHARCOAL.

100 tons Hanging Rock	$47.00—60 dys.

BLOOMS.

50 tons Juniata	$90.00—cash.

LONDON, January 31, 1868.

Bars, Welsh in Lond.	£6 10 0	@..	Do. railway, Wales.	£5 0 0	@£5 10 0
Ditto to arrive	6 10 0	.. ....	Do. Swd. in London	10 5 0	10 10 0
Nail rods	7 0 0	7 10 0	To arrive	10 5 0	10 10 0
" Stafford in Lond.	7 10 0	8 10 0	Pig, No. 1, m Clyde	2 12 3	2 17 6
Bars	7 10 0	9 10 0	Do. f.o.b, Tyne, Tees	2 9 6	.. ....
Hoop	8 10 0	9 12 6	Do. Nos 3, 4, f.o.b. do	2 6 6	2 4

Sheets, single	9	5	0	10	0	0	Railway chairs	5	10	0	5	15	0
Pig, No. 1, in Wales	3	15	0	4	5	0	" spikes	11	0	0	12	0	0
Refined metal, ditto	4	0	0	5	0	0	Indian Charcoal Pigs						
Bars, common, ditto	5	15	0	6	0	0	in London, pr. ton	7	0	0	7	10	0
Do. merch. Tyne or Tees	6	10	0										

STEEL.

Swed., kegs (rolled)	14	5	0	..	..	..	Swed., in faggot	16	..	..	..	..	0
" (hammered)	15	5	0	15	10	0	English, spring	17	0	0	23	.	0

Iron Items.

THE PROSPECT OF THE BRITISH IRON TRADE.—Reviewing the Iron Trade for the past year, Messrs. A. Sparrow & Co. (Liverpool) write, "During the last ten years the production of iron and steel has increased in France 300 per cent.; in Prussia 350 per cent.; in Belgium 400 per cent.; and in England, less than 40 per cent. In 1867 the export of rails was greatly in excess of the exports for 1866, and in the rail-making districts prices were characterized by a firmer tone than in Staffordshire, where the want of orders was, and is, felt severely, many of the works not having orders equal to half their capacity. The iron-masters of South Wales have arranged a reduction of 10 per cent. in wages, and in the North Yorkshire district the men are under notice for a similar reduction, but the South Staffordshire masters have met and agreed to make no effort to reduce wages and prices, though no doubt is felt but that a reduction in prices would result in an increased demand for export. In North Staffordshire masters have resolved to endeavor to effect a reduction in wages. The demand is light for shipbuilding and railway works at home, and if the inactivity in these important branches of consumption continue, it will be felt severely by the iron trade."

Mr. R. Hoyle (Newcastle-on-Tyne, England, January 11) writes, "It would, perhaps, be unprofitable to speculate on the future of the iron trade. So long as railways and other large iron-consuming interests remain in their present state of collapse, the iron manufacture can hardly be prosperous. Another drawback is presented in the unsettled state of political affairs abroad, and the existing and well-grounded fear that the peace of Europe may be disturbed. On the other hand, however, there is a general feeling that things have passed their worst. Confidence is returning, and will doubtless gather strength as the season advances. Iron shipbuilding and some other important branches of trade show symptoms of improvement. Upon the whole, therefore, it is, perhaps, not too much to expect that the year upon which we are now entering, may be busier and more profitable than has been the year to which we have just bade adieu.

During the first eleven months of 1867 the imports of pig duty free into France amounted to 49,592 tons, against 66,584 tons in the corresponding period of 1866, showing a decline to Nov. 30, last year, of 16,992 tons. On the other hand, the imports of pig with payment of duties were 18,653 tons more in the first eleven months of 1867 than in the corresponding period of 1866, the figures being 77,421 tons and 58,768 tons respectively. As regards iron and plates, the imports free of duty were 58,000 tons in the first eleven months of 1867, showing an advance of 6,500 tons upon the corresponding period of 1866, while the imports of those products, with payment of duties, only amounted to 6,000 tons in the first eleven months of 1867, as compared with 8,000 tons in the corresponding period of 1866. The total exports by warrants for pig iron and plates were 105,989 tons in the first eleven months of 1867, against 141,663 tons during the same period of 1866, showing a decline of nearly 36,000 tons last year. The direct exports of the same products also showed a decline in the first eleven months of 1867, having only amounted to 16,657 tons, against 19,200 tons in 1866.

The yearly production of pig iron by the furnaces of Great Britain forty years ago was a little under 700,000 tons, and that of the United States, the same year, about one-fifth as much, or 140,000 tons. The production last year may be taken in round numbers for Great Britain 5,000,000 tons, and the United States at 1,250,000 tons, showing an increase, the effect of which upon the whole worldcannot be estimated by mere figures. The total product of the world at the two periods may be stated at a little over 1,000,000 tons forty years ago, and 9,000,000 per annum at present.

The Lehigh Valley is somewhat dull, as in other sections of the country, but the iron men are making extensive preparations for the spring and summer. It is proposed to erect from twelve to fifteen furnaces during the coming season, and new stacks are now being erected in addition to those already in operation, at the following places: Two at Bethlehem, one at Hellertown, one at Glandon, one at Allentown, one at Alburtis, one at Catasque, one at Hokendauqua, and one at Whitehall.

THE COAL TRADE.

NEW YORK, Feb. 21, 1868.

The last few sun-shiny days have spread a more congenial feeling among the trade, and the clearing away of the snow in our streets, and the breaking up of the ice in the harbor, will permit of the shipping of coal. Business generally in all branches, has assumed a more healthy aspect; and that the Coal Trade is no exception, the following evidences speak for themselves:

OFFICE OF THE DELAWARE AND HUDSON CANAL CO., No. 7 Nassau street.
New York, Feb. 15, 1868.

Sir—We herewith send you our schedule of prices for the present year, embracing the "Grate," "Egg," "Stove" and "Chestnut" sizes of Lackawanna Coal, deliverable at Rondout. Should you desire to contract at those prices please fill up the agreement on next page, for the quantities required, sign the same and return to this office, and on its receipt a duplicate will be sent you duly accepted on behalf of the company.

Should you prefer to contract for quantity merely, leaving prices to be fixed month by month, according to the fluctuations of the market, you can do so, by filling up and signing the agreement on third page, and returning it promptly to this office, when a duplicate will be sent you.

Contracts for a limited quantity of the "Furnace Lump," "Steamer Lump," and "Pea" sizes, may be made on application at this office either in person or by mail.

Please return this circular by an early mail if you desire to contract, as the company does not bind itself to hold this offer open for any definite period, but reserves the right to advance prices at any time where contracts have not been made and accepted in writing.

The company will be prepared to ship coal from Rondout immediately on the opening of river navigation, and commence deliveries on their contracts by the first of April, provided the river is then open. Very respectfully,
J. C. HART, Sales Agent.

Prices of Lackawanna coal of this year's production, deliverable on board vessels at Rondout, during the period commencing April 1st, and ending November 30th, 1868.

	April.	May.	June & July.	Aug. & Sept.	Oct.	Sept.	
Grate	$4 10	$4 20	$4 35	$4 60	$4 80	$5 00	per ton of 2,240 lbs.
Egg	4 10	4 25	4 35	4 60	4 80	5 00	" "
Stove	4 30	4 40	4 50	4 65	5 00	5 25	" "
Chestnut	3 90	4 00	4 10	4 25	4 40	4 60	" "

Nett Cash—Payable within fifteen days after delivery of the coal.

The company is prepared to deliver coal in its own boats, at New York city and at places on the Hudson River, without trans-shipment at Rondout. Freight to New York 65 cents per ton.

The regular Scranton sale is advertised in our columns this week to take place on Wednesday next, the 26th inst., at the usual time and place. Fifty thousand tons fresh mined coal will be disposed of. The prospects are, that better prices will be realized at this sale, should the market retain its present buoyancy. Messrs. Lewis Audenreid & Co., and other leading coal dealers, petitioned, some time since, the Delaware and Raritan Canal Company for an extension of the towing limits, above Twenty-sixth street. The following replies explains itself:

DELAWARE AND RARITAN CANAL COMPANY.

OFFICE OF THE ENGINEER AND SUPERINTENDENT,
TRENTON, N. J., Feb. 15, 1868.

To Messrs. L. Audenried & Co.—Gentlemen: In accordance with the request made in the memorial enclosed in your favor of the 13th inst., our towing limits for this year will be 531 street, instead of 26th street, as heretofore. Will you be kind enough to communicate the above to the parties interested, and oblige your obedient servant, J. G. STERNES.

Freights remain unchanged, as yet. Next week, no doubt, will note some changes.

The following table exhibits the quantity of Coal passed over the following routes of transportation for the week ending February 15, 1868:

	1867.		1868.		INC. OR DEC.	
	WEEK.	YEAR.	WEEK.	YEAR.	WEEK.	YEAR.
Phil. & Reading R. R.	39,936	306,844	35,389	385,385	d 4,547	i 78,541
Lehigh Valley R. R.	28,699	193,176	28,949	366,069	d 249	i 172,893
Scranton North	6,697	39,640	6,496	53,092	d 201	i 13,452
" South	22,990	133,745	18,381	129,021	d 4,609	d 4,124
Penn'a Coal Co. Rail.	64	30,344	11,065	75,628	i 11,001	i 45,238
Shamokin	9,010	38,410	7,295	36,501	d 1,085	d 1,909
Treverton	916	3,101	637	3,539	d 279	i 438
Short Mountain	570	3,053	574	3,865	i 4	i 812
Lykens Valley C. Co.	612	3,559	1,870	10,391	i 1,258	i 6,832
Broad Top	3,380	20,086	2,821	16,533	d 559	d 3,553
W'mstown Co'y, E.	2,568	8,015	1,284	15,411	d 1,284	i 7,396
Total	115,442	779,973	115,391	1,095,389		
		1,095,389	115,442			
Increase		315,416	d 151			

Schuylkill Coal Trade.

BY RAILROAD, FOR WEEK ENDING FEB. 20, 1868.

St. Clair	....
Port Carbon	5,048
Pottsville	789
Schuylkill Haven	22,695
Auburn	596
Port Clinton	15,651
Total for week	44,779
Previously this year	385,385
Total	430,164

Lehigh Coal Trade.

SHIPPED BY RAILROAD FOR THE WEEK ENDING FEBRUARY 15, 1868.

WHERE SHIPPED FROM.	WEEK. Tons. Cwt.	PREVIOUSLY Tons. Cwt.	TOTAL. Tons. Cwt.
WYOMING REGION.			
Franklin Coal Co.	.....	.....	.....
Audenreid	.....	50 06	50 06
Lehigh & Susquehanna	.....	.....	.....
Germania Co.	189 01	2,494 03	2,683 04
Wilkesbarre Coal & Iron Co.	272 17	7,900 17	8,173 14
Warrior Run	117 08	3,320 14	3,438 02
Parrish & Thomas	1,360 11	11,798 10	13,159 01
New Jersey	112 19	3,234 03	3,347 02
Union	293 12	1,275 01	1,568 13
Wyoming Coal & Transportation Co.	107 15	2,917 10	3,025 05
Newport C. C.	.....	.....	.....
Morris and Essex Mutual C. C.	30 07	718 15	749 02
Consumers	.....	.....	.....
Everhart C. Co	.....	.....	.....
Plymouth C. C.	.....	152 14	152 14
H. B. Hillman & Son	107 10	1,803 12	1,911 02
Bowkley, Price & Co.	.....	149 08	149 08
Mineral Spring	64 00	2,604 04	2,668 04
Valley Coal Co.	.....	.....	.....
Enterprise Colliery—J. H. Swoyer	534 16	4,431 12	4,966 08
G. B. Linderman & Co	.....	.....	.....
Washington C C	.....	.....	.....
West Pittston	.....	.....	.....
Barclay Coal Co	.....	.....	.....
Shawnee	53 05	1,610 09	1,663 14
Consumers Coal Co.	.....	827 05	827 05
Harvey & Bro.	.....	855 10	855 10
Wyoming Valley	134 00	206 12	340 12
Other shippers	.....	.....	.....
Total Wyoming	3,378 01	46,351 05	49,729 06
B. M. REGION.			
New York & Lehigh	.....	8,918 17	8,918 17
Honey Brook	1,584 02	18,087 05	19,671 07
German Penna. Coal Co.	794 16	5,784 08	6,579 04
Spring Mountain	1,449 10	12 724 09	14,223 19
Coleraine	1,512 06	8,090 13	9,602 19
B. Meadow, D. W.	.....	.....	.....
John Connery	.....	.....	.....
Lehigh Zinc Co.	.....	.....	.....
Spring Brook	.....	.....	.....
Other Shippers	5 07	63 07	68 14
Total B. M. Reg	5,396 01	53,668 19	59,065 00
HAZLETON REGION.			
Central Coal Co.	.....	.....	.....
Ashburton Co.	.....	142 17	142 17
Mount Pleasant	136 08	3,754 04	3,890 10
Hazleton	3 001 00	37,866 00	40,867 00
East Sugar Loaf	2,022 02	25,159 15	27,181 17
Mount Hall	.....	219 14	219 14
Latimer (A. Pardee, Jr., Bro. & Co)	924 07	4,619 04	5 543 11
Stout Coal Co.	.....	3,796 01	3,796 01
Harleigh	744 18	11,066 00	11,810 18
Ebervale C. Co.	1,294 00	12,085 01	13,379 10
Jeddo (G. B M. & Co).	1,894 19	24,486 19	26,381 16
Woodside, J. C. Co.	167 08	1,812 15	1,980 03
Highland Coal Co.	1,119 00	12,773 01	13,892 01
Cross Creek	364 13	3,440 05	3,804 18
Council Ridge	1,431 15	17,863 17	19,295 12
Buck Mountain	782 13	8,725 10	9,508 03
Other shippers	.....	.....	.....
Total Hazleton	13,883 08	167,811 03	181,694 11
UPPER LEHIGH REGION.			
Upper Lehigh Coal Co.	1,084 19	12,455 17	13,540 16
Total U. L. Reg	1,084 19	12,455 17	13,540 16
MAHANOY REGION.			
Trenton Co.	.....	.....	.....
Mount Etna	.....	591 00	591 00
Mahanoy Colliery	976 18	4,852 00	5,828 18
Delano	.....	.....	.....
Glendon Colliery	296 11	5,676 18	5,973 09
Primrose Colliery	.....	550 05	550 05
E. S. Silliman	2,012 19	20,120 10	22,133 09
McNeal Co.	674 12	2,943 06	3,617 18
Knickerbocker	503 10	8,347 14	8.851 04
Thomas Coal Co.	589 16	2,529 15	3,119 11
Williams & Herring	68 05	1 615 06	1,583 11
New Boston C. C.	84 01	6,039 01	6 123 02
Shamokin C. C.	.....	.....	.....
Caledonia M. and M.	.....	3,652 05	3,652 05
Coal from Catawissa Railroad	.....	.....	.....
Other shippers	.....	15 13	15 13
Total Mahanoy	5,206 12	56,833 13	62,040 05
Grand total	28,949 01	347,120 17	366,069 18
Same time last year	28,699 05	164,476 19	193.176 07
Increase	249 16	172,643 18	172,893 1.
Decrease	.....	.....	.....

Cumberland Coal Trade.

From the Alleganian.

By B. & O. RAILROAD.—The shipments over the Baltimore and Ohio Railroad, for the week ending Feb. 15, were as follows:

From Cumberland & Pa. R. R.	
Consolidation Company	789 19
Eorden do.	549 00
New Hope do.	172 04
Midland do.	59 01
* From George's Creek via Piedmont.	
George's C. & I. Company	576 13
Central "	553 06
Atlantic "	289 16
Piedmont "	400 18
Swanton "	274 16
Potomac "	770 11
Franklin "	47 06
Hampshire "	747 06
Total	5,269 01
From Eckhart Railroad.	
C. C. & I Co.	219 01
Total	5,488 02

[NOTE.—For the week ending February 8, there were shipped from the Piedmont region 2,908 16 tons.]

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

At New York, February 14, 1868.

Schuylkill R. A., choice	$....@$....		Lehigh Broken	5 25	....
" Ordinary	....	....	" Egg	5 25	....
" W. A., Lump	....	....	" Stove	6 00	....
" Steamboat	....	....	" Chestnut	4 75	....
" Broken	....	....	Wilkesbarre Lump	5 00	....
" Egg	....	....	" B'ken & Egg	5 50	....
" Stove	....	....	" Stove	6 00	....
" Chestnut	....	....	" Chestnut	4 75	....
Lehigh White Ash Lump	5 75	....			

SPECIAL COALS.—DEALERS' QUOTATIONS.

Diam'd Vein R. A., Sch'kill	....	H. Heils, E. S'kiln, Lorb.	5 50 ....
Locust Dale W. A., "	....	New England Red Ash	$5 25 ....
Honey Brook " Lehigh	5 50	Broad Mountain	5 25 ....
Harleigh " "	5 50	Wyoming	5 00 ....
Spring M'n " "	5 50	McNeal Co.	5 50 ....
Sugar Creek " "	5 50	Locust Mount'n (Repplier)	6 00 ....
Ashburton " "	5 50	Duncan Red Ash "	6 00 ....
Fulton White Ash	5 50	W'barre Coal & Iron Co.	5 50 ....
Stout	5 50	New Burgh Orrell Gas Coal	9 00 ....
Old Co.'s " "	5 50	Despard Gas Coal	9 00 ....
Buck Ridge W. A., Sh'kin	5 00		

Dealers in these Coals may be found in our advertising columns.

At Philadelphia, February 22, 1868.

Lehigh Lump and St'mb't	$5 00@....	Schuylkill Chestnut	2 75 ....
" Broken and Egg	5 00	Locust Mount Lump and Steamboat	4 25 ....
" Stove	5 00	" Broken	4 25 ....
" Chestnut	3 75		
Schuylkill R. A. Prepared	4 25 4 50	" Prepared	4 25 ....
" Chestnut	2 75	" Chestnut	2 87 ....
" W. A. Lump and Steamboat	4 25	Lorberry Coal	4 25 ....
" Broken	4 25	Shamokin	4 75 ....
" Egg and Stove	4 25	Franklin, (Lykens Valley)	4 75 ....
		Broad Top	4 75 ....

Scranton Coal at Elizabethport, February 22, 1868.

(Corrected weekly by D. L. & W. R. R. Co.)

Lump	$4 25@....	Egg	5 00 ....
Steamer	4 50	Stove	5 90 ....
Grate	4 75	Chestnut	4 40 ....

Prices for Pittston Coal at New York, February 22, 1868.

(Corrected weekly by Penna. Coal Co.)

Lump, per ton of 2240 lbs.	$5 40@....	Egg " " "	5 40 ....
Steamer, " " "	5 40	Stove " " "	5 60 ....
Grate " " "	5 40	Chestnut " " "	4 90 ....

Lackawanna at New York, February 21, 1868.

Lump	$5 50@....	Grate	5 75@....
Steamer	5 50@....		

Lehigh Coal at Elizabethport, February 21, 1868.

Lump	5 50@....	Chestnut	4 50 ....
Steamboat and Broken	5 25	Stove	5 50 ....
Egg	5 25		

At Baltimore, February 21, 1868.

Wilkesbarre & Pittston W. A. by car	$5 50@5 75	From wharf or yard, 50c. to 75 per ton additional.	
Lykens Valley R. A. by car	5 80@	Retail, del'd, per 2,240 lbs	7 25@8 00
Sunbury & Shamokin R. or W. A. by car	5 50 5 75	George's C'k and Cumberland f. o. b. at Locust P't for shipping	....@5 00

At Havre de Grace, Md.

Wilkesbarre or Pittston, W. A., on board	$4 85@5 10	Sunbury or Shamokin, R. or W. A., on board	....@5 25
		Lykens V'y. R. A. on b'd.	5 00@5 85

The above rates are only nominal. Shipping at this port is suspended for the season.

At Georgetown, D. C.

George's Creek and Cumberland on board | $....@ 4 50

Wilkesbarre Coal at Elizabethport, February 21, 1868.

(Corrected by Wilkesbarre Coal & Iron Co.)

Lump	$4 50	Egg	5 00 ....
Steamer	4 50	Stove	5 25 ....
Broken	4 75	Chestnut	4 50 ....

Ten cents additional on shipments from Jersey City.

Prices of Provincial Coals.

[CORRECTED WEEKLY BY LOUIS J. BELLONI, JR., 43 PINE STREET.]

Duty $1.25 per ton.

Block House (on board)	$2 00 gold	Little Glace Bay	1 87½ "
Gowrie "	1 75 "	International Co.'s "	1 75 "
Lingan "	1 75 "	Slack Coal B. H., "	75 "
Sydney "	2 25 "	" L. G. B.,	1 00 "
Pictou "	2 25 "		

Prices of Foreign Coals.

Duty $1.25 per ton.

Corrected weekly by PARMELEE BROS., 32 Pine Street, N. Y.

Liverpool Gas Caking	$11 00	Liverpool House Cannel	—@20 00
" " Cannel	14 00	" " Orrel	16 00@18 00

Per ton 2240 lbs., Ex. ship.

PRICES FROM YARD:

Liverpool Orrel, screened | $18@20 | Liverpool Cannel, scr'd | 22 00@— —

per ton 2000 lbs. delivered.

Coal Freights.

(Corrected Weekly.)

From Elizabethport.

Albany	$ 90@— —		New London	1 50@	2 00
Boston	3 25	3 00	Newport	1 75	2 25
Bridgeport	1 50	— 75	New York	55	60
Fall River	1 75	— —	Norwalk	1 50	— —
Hartford	— —	— —	Norwich	— —	— —
Hudson	— —	— —	Pawtucket and towing	2 50	— —
Lynn	— —	— —	Portland	3 25	— —
Middletown	— —	— —	Portsmouth	2 50	— —
New Bedford	1 75	2 25	Providence	2 25	— —
Newburyport	3 00	— —	Salem	2 50	— —
New Haven	1 50	— —	Taunton	1 75	— —

From Washington, N. J.

Hackettstown	$ 58	Iron Dale	$ 1 19
Waterloo	81	Dover	1 24
Stanhope	90	Paterson	1 80
Port Morris	99	Pompton	80
Rockaway	1 32	Bloomfield	1 80
Denville	1 33	Newark	2 00
Boonton	1 44	Belleville	2 10
Little Falls	1 70	Communipaw	2 10
Drakesville	1 08	Jersey City	2 20
Dickerson's Basin	1 11	New York	2 20

Foreign Freights.

New Castle and Ports on Tyne | £16 keel.

Liverpool | 11s. 6d.@12s. 6d. ton.

SAN FRANCISCO STOCK MARKET.

A Telegram from San Francisco, dated February 19th, to Messrs. LEES & WALLER, Bankers, 33 Pine street, this city, quotes Nevada silver and other stocks as follows:

STOCKS.	Bid per Ft.	STOCKS.	Bid per Ft.
Gould & Curry	650	Belcher	320
Savage	3,500	Imperial (per share)	275
Chollar Potosi	210	Alpha	1,410
Ophir	70	Kentuck	275
Hale & Norcross	7,5 K	Cal. Steam Navigation Co.	73
Crown Point	1,100	Cal. State Telegraph Co.	30
Yellow Jacket	1,150	Greenbacks	..

BOSTON STOCK MARKET.

(By Telegraph.)

Sales at Boston Stock Exchange, February 20.

50 shs	Water Power	29¼	20 do	Hancock	5¼
50 do	do	29½	50 do	Hecla	40
50 do	do	s. 30	50 do	Minnesota	c 3½
100 do	Cars Imp.	8½	34 do	Bates M. Co.	125
243 do	Bos. Hart & E.	14¼	SECOND CALL.		
1150 do	do	14½	1200 do	Boston., H & Erie	14¼
100 do	Bay State	2½	300 do	" "	b.60 14½
100 do	do	b.30	2¼		

Missouri Lead Trade.

The following figures show the amount of lead transported by the St. Louis and Iron Mountain R. R., during the year 1867:

Lead Received at St. Louis.

From Horins	2,810 lbs.
" Hemetite	10,800 "
" Victoria	392,595 "
" De Sota	530,905 "
" Vineland	225,025 "
" Blackwells	253,775 "
" Cadet	1,066,500 "
" Mineral Point	522,163 "
" Potosi	561,050 "
" Hopewell	76,378 "
" Middlebrook	23,955 "
" Pilot Knob	79,168 "
" Scotts	116,667 "
Total	3,861,856 lbs.

London Copper Trade Circular.

Messrs. Vivian, Younger, and Bond, Jan. 31, write—There has been but little business transacted in Liverpool in Chili produce. A parcel of 60 tons of bars of ordinary brands, which has been rather pressing on the market of late, was parted with at £68 10s., whilst 150 tons of a favorite brand to arrive, fetched out of second hands, £69 10s. There is nothing now of the latter description to be had, on similar conditions, under £70. Of regulus, 300 tons were sold at 14s. per unit. Advices received from Chili report charters for the fortnight ending Dec. 16, as comprising 1200 tons of fine copper, which is, as was anticipated, considerably under the average. The same mail brings news of a rise both in freight and exchange, to which it is added that some small mines have ceased to work. The news has given the metal somewhat more tone, and it looks as if present values will be maintained. Urmeneta ingots have fetched £73 10s., and are held for £74. English and fine foreign copper quiet.

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WESTERN & COMPANY, PROPRIETORS.

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THE NEW YORK NEWS CO., 10 Spruce street, N. Y.

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☞ The American JOURNAL OF MINING has a larger circulation than any other paper of the kind in the United States.

NEW AGENCY.—MESSRS. M. A. LATHROP & BRO. have been appointed our sole agents in the New England States for the AMERICAN JOURNAL OF MINING and our new Spanish paper EL CORREO HISPANO-AMERICANO. Their address is 11 Court street, Boston, Mass., where all information respecting communications, subscriptions and advertisements for these papers will be gladly given to those who may wish to favor us with their patronage.

NEW YORK, SATURDAY, FEBRUARY 22.

CONTENTS OF THIS NUMBER.

EDITORIALS.—The Concentration of Ores—International Coinage—An Outside View—The Victims of Science—Songs of Miners, III.—Explanations—Our Cabinet.
ORIGINAL PAPERS.—On a Theory of Gold Genesis, by Prof. Henry Wurtz—Blow-Pipe Coal Assay, by Benjamin Smith Lyman.
SCIENTIFIC MEETINGS.—Polytechnic Branch of the American Institute.
ILLUSTRATED MACHINERY.—Terwilliger & Co.'s Burglar Proof Safes.—Model Steam Engines.
MANUFACTURING AND MECHANICAL NOTES, —No. 7.—Microscopes.
MINING SUMMARY.—Gold and Silver: Colorado, Nevada, Arizona, Montana, Dakota, Idaho, Utah, British Columbia.—Miscellaneous: Virginia City and the Comstock Lode Mines.
MISCELLANEOUS.—Immigration Statistics—Paddling 20,000 miles—Mineral Statistics of New Zealand—Iron Railways—Inexplosive Nitro-Glycerine—Beet Root Sugar, etc.
NEW PUBLICATIONS.
SPECIAL NOTICES.
MARKET REVIEW.—Mining and Petroleum Stocks, Finances, Stocks, Metals, etc.
THE IRON TRADE.
THE COAL TRADE.—Quotations, Shipments, Freights.
PATENT CLAIMS.
SPECIAL SCIENTIFIC BREVITIES.
OX-DIT ABOUT MINERALS.
ALL SORTS.

THE CONCENTRATION OF ORES—I.

This subject, the discussion of which we propose to open in the present article, is one of present, vital interest to American mining enterprise, and yet, perhaps, of all topics connected with mining, the one most neglected in this country. The causes of this neglect are numerous, and it would not be worth while to enumerate them all. We shall only point out a few, which have a direct bearing upon, not only the evil, but also its cure.

In the first place, the processes of separation and concentration are essentially the outgrowths of close calculation and economy—elements which, we regret to say, have as yet scarcely entered into our mining operations. The vast extent and variety of our mineral deposits; the fickleness with which capital flits from one investment to another, seeking to suck from each the drop of profit which may be most easily gathered; the comparative facility with which losses in one enterprise are repaired, not by perseverance and ingenuity there, but by good luck elsewhere; the general expectation of large gains or none; these peculiarities of a rich and undeveloped country, inhabited by restless, enterprising, sanguine men, have stamped themselves upon our mining industry. We have been skimming off the cream of our treasure, and giving the milk to the pigs. In our mines of gold and silver, the ore has scarcely been sorted as it was brought to grass. Either it was "pay-rock," or it was not "pay-rock;" in one case it was crudely worked, and in the other case thrown away. Ores containing mechanical admixtures of baser metallic minerals or of gangue, which hindered the processes of metallurgical treatment, and which could have been removed by simple mechanical means, have been classed as "refractory" and abandoned as worthless. Many a company has struggled along, mining five or ten times as much ore as it could afford to work, and vainly expecting the valuable contents of a fraction of the rock extracted to pay the cost of extracting all the rest, and leave a profit besides.

In the second place, the attempts made by some, to concentrate and so more economically treat the crude products of mining, and by others, to separate from those products by preliminary processes their injurious mechanical admixtures, and thus to fit them for successful reduction, have frequently resulted in failure. This department of mining engineering is one which requires scientific knowledge and skill. A man may mine reasonably well, in the absence of special difficulties, without thorough education; he may soon learn how to manage the simpler processes of beneficiation; and, at all events, any lack of skill will only be evident to critical observers who are themselves skilful, while actual losses in tailings, slags and waste, can easily be concealed from stockholders and employers, or ascribed to the "refractory" character of the material, or the imperfection of the "process." But when a man undertakes, by concentrating ores, to secure a greater profit than is obtained without concentration, the test of success is absolute, and easily applied. Failure cannot be hidden, and victory is only possible to skill. But unfortunately this very department, which calls so imperatively for knowledge and training, has been most deficient in the means of obtaining them. The methods and apparatus in use for many years in Europe, were successful under very different conditions from those which obtain among us; and frequently they cannot be applied where labor is costly and manual training not life-long and hereditary. It is but recently that the science of Germany has produced continuously and automatically working concentrators, excelling in the delicacy of their operations even the practised eye and hand of the veteran workman. Still more recently have these latest results of science been made known to the world in such works as the magnificent "*Aufbereitungskunde*" of RITTINGER (Vienna, 1867); and only since the beginning of the present year have they been laid before the American public, in the English language, in the admirable manual of GUIDO KUSTEL.

It is not surprising, then, that constant temptations to speculation and recklessness, together with ignorance of the true importance and uses of concentration, and inaccessibility of thorough information as to methods and machinery, have combined to keep us far behind the progress of other nations in this great economy. We shall attempt in future articles to place this subject in its true light, to arouse the minds of the mining community to its importance, and to discuss the contents and the merits of Mr. KUSTEL's new book.

INTERNATIONAL COINAGE.

We have already laid down (AMERICAN JOURNAL OF MINING, Vol. V., p. 9, Jan. 4, 1868,) our plan for securing a true and permanent international monetary unity, which is "to establish simple ratios of weight, *stamp the weight of every coin upon its face, and preserve unalterably a uniform fineness.*" There is no economical difficulty involved in adopting the metrical system of weights and measures, and consequently that system is making, and will continue to make, rapid progress among the nations. There is great economical difficulty in re-coinage and re-adjustment of currencies; and consequently that method of seeking an everywhere current money will make but slow progress, if it makes any. Mr. RUGGLES' plan of assimilating our gold dollar to the French system establishes at once a gulf between us and the English, which the cautious legislators of Great Britain will scarcely consent to overleap, while, at the same time, it places our coinage hopelessly out of joint with the metrical weights, since the proposed gold dollar would weigh 1612.9 milligrammes, and contain 1451.61 milligrammes of fine gold. Even if we should adopt this inconvenient unit (as we possibly may) and Great Britain should accept it (as she certainly will not), what have we gained? An artificial adjustment, which perpetuates the evils of incommensurable coins and weights, and which, secured only by treaty stipulations and not by natural fitness, is liable to be overthrown at any time, when the exigencies of one nation may require (or be held to require) a change in its coinage. France is too arrogant to make any concession now; and hence, for the sake of unity, we are called upon to give up our system, which is demonstrably the best. But a strong party of French economists advocates even now a different system, and condemns the present unmetrical French coinage. Suppose that, after we had yielded to Gallic obstinacy and adopted the present French standard, that party should triumph, and desire to reform the monetary arrangements of that country: would France, who now refuses to change, abstain from change on our account? Or, to put the question less offensively, should we do well by giving international endorsement to a mal-adjustment, to prevent future re-adjustment on a more rational basis? We hope our readers will refer, in this connection, to our former article on this point, and to the discussion of it which we transferred at that time from the columns of the *Evening Post*. We do not claim originality for our position, nor for the arguments by which we have sought to enforce it. They are familiar to many thoughtful men; and they have been recently reiterated with admirable cogency and clearness, in the petition addressed to Congress by the American Statistical Association, which will be found in another column. This document contains the plan which we have advocated, and to which we unalterably adhere. *A simple treaty, making our metrical gold coinage current according to its weight, would give us at once every advantage of international unity which is sought by Mr.* RUGGLES' *cumbrous device, and preserve to us at the same time every advantage which he counsels us to surrender.*

Our representative at the Paris Conference (for whom we cherish high esteem) has rightly estimated the great value of a universally current money. He has not over-estimated the evils of complicated exchange, expensive brokerage and wasteful coinage. But he has committed the capital blunder of jumping to the conclusion that, because the object is important, his plan of attaining it is the best. Even aside from the simple expedient we recommend, there might be a plan devised, as a compromise, which would neither wrong the United States nor exclude England. The unyielding firmness of France secured the proposal by the Conference of a plan which does both. Why should not we also try the effect of a little firmness in the matter?

THE VICTIMS OF SCIENCE.

The Paris correspondent of the London *Chemical News* is responsible for the following:

"As showing an advantage, unrecognised, perhaps, by many, of living under enlightened rulers, in a country where chemical science is appreciated, the mention of a strange fact related in one of the scientific journals may find place here. The narrator, visiting a prison, asked his guide, are the prisoners well nourished? 'Mon Dieu, Monsieur,' the man replied, 'the bill of fare for each day has been prepared by a special commission, 33 per cent. nitrogenous matter, 27 albuminoid, 15 of gelatine, 18 of fibrin, 7 of hydrated matter.' The guide also informed him that each prisoner had, besides, the right to 20 cubic metres of respirable air, 10,000 litres!"

Unfortunately for the inmates of this model dieteticon, the celebrated experiments of two Zurich professors, last year, have *changé tout cela*. These gentlemen, who rejoice in the melodious names of FICK and WISLECENUS, put the matter to a practical test by ascending one of the Bernese Alps, after a period of religious abstinence from nitrogenous food. They found it was hydrocarbon, and not nitrogen, that supplied them with motive power. Possibly the feed-formula of the French prison was all wrong, and the large per-centage of nitrogen administered only rendered the inmates pugnacious (that being, according to Dr. LETHEBY, one of its effects.) Pugnacity in a prison may be harmless, but it is certainly unnecessary; and the State should not incur expense for the production of such a superfluous commodity. Here is matter of discussion for the evidently nitrogenophagous Opposition in the *Corps Legislatif*.

Votaries of science though we are, we feel a peculiar disinclination to this method of uniform feeding, according to chemical reactions. We prefer a bill of fare to a certificate of analysis. We would rather eat our victuals, yes, even bolt our grub, than consume our organic constituents. Azote has not for us the charms of beefsteak, nor will hydrocarbon tickle our palate like sugar. Besides, even if men are (as, perhaps, we must reluctantly admit) nothing but peripatetic chemical laboratories, or, according to another hypothesis, very wasteful steam-engines, or unconscious martyrs in a state of slow combustion, they are not all alike; and any attempt to assimilate the dining-table to the multiplication table is cruel as well as unphilosophical. These abstract theories ignore a class of facts (such as nausea, and the "agreement" or "disagreement" of particular foods with particular individuals) which enter into the comfort and philosophy of life quite as really as the equations of chemistry. We are willing to have our "constituents" determined; we recognize the interest and value of theories as to how we live and move and have our being; we are content to consider everybody but ourselves a mere compound of bone and tissue, or other forms of solidified gas; but we do not consider ourselves "in that bony light;" and we would rather trust our physician, or still better, our own experience, on the subject of our diet, than the profoundest chemist that ever stewed a muscle or evaporated a whole anatomy.

AN OUTSIDE VIEW.

The Leipzig *Berg-und Huettenmaennische Zeitung* (Miners' and Metallurgists' Journal) of Jan. 22d, contains an admirable paper by Dr. HERMANN CREDNER, on mining, speculations and the sphere of mining bureaux in North America. As Dr. CREDNER is one of the most accomplished and indefatigable geologists whom Germany has lent to this country, and as his prolonged residence and extended travels in the United States, together with his position as a member of the Board of Experts of the American Bureau of Mines, have given him an unusual personal acquaintance with the matters of which he writes, we take pleasure in translating a portion of his article, as an intelligent outside view of our mineral resources and their advancing development. "The mineral wealth of this continent," he writes, "is amazing in extent. The quantity of useful minerals it affords can only be paralleled by their variety. The quicksilver ores of the Pacific coast; the auriferous quartz veins and intercalations of eastern California, Colorado, Montana, etc., and the southern Atlantic States; the argentiferous veins of Arizona, Nevada and Idaho; the copper ore deposits of Michigan, Tennessee and California; the occurrences of zinc and lead ores in New Jersey, Illinois and Virginia; the 'iron mountains' of Missouri and Lake Superior; the argillaceous spherosiderites (associated with limestone and coal) of Pennsylvania and West Virginia; the coal-basins which underlie a great part of the central States; the petroleum springs of Ohio and Pennsylvania; the salt springs of Michigan and New York, and the rock-salt deposits of Louisiana;—all these mineral occurrences combine to render almost every one of the forty-seven States and Territories of the Union a field for extensive mining operations. And, as if Nature had determined to build her treasuries on a scale proportioned to the vast extent of the continent, these deposits of useful minerals attain dimensions which we in Europe would deem extraordinary. Masses of native copper, weighing seven thousand pounds, have been found at Lake

Superior; single wells in Pennsylvania have produced more than one hundred and twenty thousand gallons of oil daily; the copper ore deposits of Ducktown are hundreds of feet in thickness; the coal fields of the Union cover fifty-five thousand square miles; masses of ruby silver, silver glance and horn silver were exhibited in New York, of which one was worth five thousand dollars; the gold region of the Southern States embraces thousands of auriferous quartz deposits; the iron ore of Lake Superior forms whole mountains!

"I can only indicate in passing, of what benefit it would be to America, if the governments of the different States here, as in Europe, regulated mining by law, exercising some sort of police supervision, and so at once supporting the enterprise of capitalists and reducing the risk of mining speculations. But no such regulations, securing the blessing of this industry, have been adopted in this country. Mining laws do not exist in the eastern part of America; in the west, they are made in every district by a handful of assembled pioneers. The works of the State geologists are partly out of date, and partly out of print. In the latter case, they are collected as rarities by amateurs, at high prices; and so do not serve their practical purpose, since they are not easily accessible to miners. Mining schools have come into existence only within the last few years.

"The sovereign people, on the one hand, is therefore free to ruin its mines by 'robbing' them; and masses of capital, on the other hand, are wasted to no end, from ignorance of simple rules of mining engineering and facts of geology. The mineral wealth of the United States is too great for the consequences of such evils to become immediately evident, but the mistakes of the present will avenge themselves on the future. The consequence has already been, to deprive the business of mining—which is considered in Europe as an element of solid pecuniary advantage to the State and its citizens—of its solid basis in this country, so that its management is left in a great degree, to the professional speculator. The latter expects his profits, not from the product of the mines, but from the cheap acquisition, the artificial enhancement, and the sale, of shares of stock."

We shall give further extracts in future from this masterly description of the condition of American mining enterprise. The article contains a well deserved eulogy of the American Bureau of Mines, as an institution which was planned to counteract the evils infesting this department of industry. Time has shown, however, that what we need is not only honest and able private establishments, but a national centre of intelligence, and that not a Bureau, but a School.

SONGS OF MINERS—III.

As we have already given our readers specimens of French and German miners' songs, we naturally feel called upon to add something from our own country. The following is suggested to fill this vacancy. We hesitate to publish it, for several reasons. We have no evidence that it is a song; and we doubt whether it is poetry—or truth. However, the author says it will "go to Old Hundred like a cam to a tappet," and that must satisfy us:

JIM GREEN—A DOG-EAT-DOGGEREL BALLAD.

There was a man, Jim Green by name,
He struck a ledge and staked a claim,
Then came to town by the overland 'bus,
And coralled a scientific cuss.

"Professor, I should like to sport
An assay and a swell report;
I want you to crack up my rock
And take your dividend in stock."

The swell report was quickly done;
The ledge it was a fissure one,
Quite well-defined; and the ore it run
At the rate of a thousand dollars a ton.

Then Jim he got a bran new hat,
(The trader wouldn't take stock for that!)
And started, one of the steamer-days,
To sell in New York, and make a raise.

He mounted all his handsome things—
Two California diamond rings—
And a nugget breastpin on his shirt
Shed golden lustre o'er the dirt.

He landed and to Wall street went,
And there he found a nice old gent;
So Jim laid out to do his best,
And talked him till you couldn't rest.

"You ha'n't no notion how great," says he,
"Our mineral resources be;
Jest one per cent. of what we get
Will pay this whole dam National debt.

"There a'n't a better cow to milk
Than a first-class mine (that a'n't a bilk);
She'll give you quartz"—and here he cussed—
"If that a'n't level, then bust my crust."

The nice old gent, he was no clam;
He had served a while with Uncle Sam.
And what he hadn't found out yet
Was mighty poor tailings, now, you bet!

So this old capital sharp told James
He often bought these first-class claims,
And if he froze to any feller,
It was a mineral property seller.

Then just to grease the bargain, Jim
Made out a quit claim deed to him,
And, as a matter of form, agreed
To name one million in the deed.

In thirty days the thing was done;
And when Jim figgered what he'd won,
He felt as cheap as a Yankee clock;—
Ten whiskey-straights *and the rest in stock!*

The stock he had promised not to sell
(How it happened, he couldn't tell—
He signed the documents in haste)
Until the company's stock was placed.

There was a board of rich trustees,
(A stock donation to each of these)
And they sold the shares, on terms to please,
To twenty widows and ten D. D.'s.

A Brigadier was President;
The Treasurer was the Wall street gent;
And for economy, 'twas agreed,
The Treasurer only should be fee'd.

When Jim Green's turn to sell came round,
There was nary buyer to be found,
And the Treasurer kindly did advise
To hold his stock till it should rise.

"Look here," says Jim, "this thing's a sham;
I'm told your stock a'n't worth a dam!"
"My friend, in mining operations
There always are these fluctuations."

As time eloped, they failed to get
The process for the sulphurets,
And ere they solved that fatal doubt,
The blasted ledge had petered out!

The trustees all did abdicate;
The clergy preached man's lost estate;
The Treasurer took a foreign tour;
The widows—Heaven protect the poor!

Jim Green upon a marble white
His name, and this: "Dead Broke," did write;
Then lay down in an onion bed
And pulled the tombstone over his head. R. W. R.

EXPLANATIONS.

Col. DAVID BUEL, passing through this city, *en route* for Nevada, sends us word, that the article in the London *Mining Journal* on his affairs, which we criticized with some severity, last week, was not written by him, but by the editor of that paper; that he has never represented the average yield of his mines as more than seventy dollars per ton; and that he is now accompanied by an English engineer, who goes to examine them in interest of purchasers. The London Mining Journal, by its injudicious assistance, has put Col. BUEL in a false position. We cannot too strongly reprehend the conduct of gentlemen of the press who hear a mine-owner tell his simple, truthful story, and then print it in such exaggerated form that the modest narrator appears to be one of those abandoned persons who falsely extol the commodity they have for sale. (We refer, of course, to mock auctioneers and the like.) Col. BUEL is to be congratulated; his character has had a narrow escape.

Our Cabinet.

We have to acknowledge the receipt from Mr. F. W. GEISSENHAINER, Jr., of two pieces of "Tarshish" ore, from Alpine county, California; also a piece of "Merrimac" ore, taken in the tunnel, fifty feet from the surface, and said to assay about $400 to the ton. The "Tarshish" ore is very handsome, consisting of aluminous gangue, with fine cavities and druses of quartz and ruby silver.

Scientific Meetings.

POLYTECHNIC BRANCH OF THE AMERICAN INSTITUTE.

STEAM TRACTION CARRIAGE—NEW STEERING PROPELLER—STEAM PLOUGH—COMBINED HOOK-AND-LADDER CARRIAGE AND FIRE ESCAPE—PILE FOUNDATIONS—SYRACUSE SALT.

The regular weekly meeting of the Polytechnic branch of the American Institute was held last Thursday evening, Prof. Tillman in the chair. The attendance was more than sufficient to fill the hall.

Mr. Vernol exhibited a model of a steam carriage, intended to take the place of road locomotives, which in operation very closely imitates walking. The machine is propelled by four legs, two on each side near the rear, operated by cranks and eccentrics. The feet are grooved so as to take hold of the ground. The front is supported on two light wheels, which are used for steering purposes. The inventor claims that it will attain a speed of twenty miles an hour, and must eventually take the place of the locomotive.

Mr. F. G. Fowler showed a model of a steering propeller, which attracted much attention. Its principal feature consists of a vertical shaft, with four horizontal arms, at the extremities of which are hung four vertical blades by pivots placed on their vertical central line. The blades are feathered by a horizontal eccentric, so that they exert a propelling force throughout their entire circuit. By suitable connections between the helm and the eccentric, the steersman is enabled to cast the propelling force to any point of the compass, by which arrangement all ordinary steering and a variety of movement is produced. The wheel is self-acting, and no rudder is needed. To back the boat it is not required to reverse the wheel, as the result may be obtained by simply changing the angles of the vertical blades. This mode of propelling is certainly very ingenious, and appears to work with a success which would, to say the least, justify more decisive experiments.

Mr. Geo. Willard exhibited a model of a steam plough, the original of which was stated to have been tried in Illinois with satisfactory results. The spades are so arranged as not merely to dig up the earth, but to propel at the same time, and will work to a depth of ten inches. The machine is within the control of one man, and is calculated to accomplish four acres a day. Its cost would be about $2,000, but it is claimed that it would prove itself, finally, less expensive than any other form of plough.

Mr. O. Burton presented the model of a combined hook-and-ladder carriage and fire-escape. The longest ladder in use by the fire department of this city is but forty-five feet, but by the speaker's arrangement it was possible to have a ladder sixty feet long. A peculiarity of this carriage is that the ladders may be so placed on it as to form a platform on a level with the fourth story of a house, which is capable of supporting several firemen.

Mr. Hamilton E. Towle read a paper on "Pile Foundations," which enumerated the results of some experiments made in Florida, in 1851, by direction of the U. S. Navy Department. The experiments were principally in withdrawing wooden piles from compact sand, in order to test the value of the foundation previously had. It was stated as one of the results, that the practical limit of depth to which an ordinary yellow pine pile could be driven into sea sand, by a two ton hammer falling thirty-three feet the last blow, was fifteen feet. Such a pile, thirty feet long, under such a final blow, would only penetrate six-tenths of an inch, when it had attained this depth. Standing, without driving for any period, it was said, greatly increased the resistance to any subsequent impact. To withdraw a pile a direct force of over forty tons was required, but the same force acting steadily downwards upon another pile, produced no settlement whatever. A pile thirty feet long, one foot in diameter, driven by a ram falling thirty-six feet the last blow, continuously sustained 2,800 pounds, and, by calculation, had a bearing capacity nearly four times as great. This pile moved 3¾ inches the last blow, under a hammer of 1630 pounds. The resistance given at a depth of thirty feet was considered ample by the engineer in charge of the experiments.

Mr. Overton gave a sketch of the Syracuse salt works. Since the opening of the first salt mines in this country, in 1797, 80,000,000 pounds of salt have been extracted. According to actual test, the Syracuse salt is equal, if not superior, to any in the United States. Dr. Vander Weyde followed with some corrobatory remarks. Dr. Boynton stated that the Syracuse salt was the purest produced anywhere. Some of the salt formerly made there was not very good, but the defect had been discovered, and remedied.

Correspondence.

[To insure insertion of correspondence in our columns, the full name and address of the writer must be given.]

The Orinoco—The Gold Fields of Venezuela.

UPOTA (two days South of the Orinoco),
VENEZUELA, Dec. 7, 1868.

EDITORS AMERICAN JOURNAL OF MINING:

Leaving St. Thomas in steamer Eider, we touched at the more important midward islands until we reached Trinidad. The lake of hardened petroleum or pitch we left to visit on our return, and pushed on for the Orinoco River, by steamer Iron King, plying between Guyaquil and Ciudad Bolivar. On the third day we arrived at the point where Sir Walter Raleigh had a battle with the Indians, and lost his eldest son. The mountains south of the Orinoco were always in sight, and gave great beauty and interest to the scenery. To sail along the Orinoco, to see its hills and shores still clad in virgin forests, with hardly a plantation in sight for a day together, and no villages and thriving towns, contrasts strongly with the Mississippi of our country. The Anglo-Saxon race is for life, business, improvement. It lives only to change the face of nature from its primeval wildness to order, beauty and usefulness. The Latin races and their descendants in South America live only to vegetate, subsist. Why should they cultivate the soil, when the soil will produce for them?

At Los Tablos, near the mouth of the Caroni River, a large affluent of the Orinoco from the south, we disembarked and took mules for the El Dorado of the Conquisdores of Venezuela, and of Sir Walter Raleigh and many early navigators. Sir Walter had "high expectations." In glowing words he paints the profusion of gold ornaments he saw upon the Indians of the south bank of the river. He saw, in imagination, a lake far inland, with a large and beautiful island, and on this island fabulous wealth, and mines of silver and gold, richer and vaster than ever seen by mortal eye.

When the country was conquered and the natives brought under civilization by the Capuchin Fathers, searching for gold was discountenanced and the people encouraged to cultivate the soil, labor in the loom of ruder arts, and gradually grow into a higher civilization. After the separation of these Spanish colonies from the mother country, although the people retained tradition of golden ores South, they were too poor to engage in exploration, and it was not until about the time of the discovery of gold in California, that auriferous sands, bearing large nuggets were found in the mountains, the waters of which flew north to the Orinoco, west to the Caroni, and east to the sea shore. What California has been to the United States, what Australia has been to the British Empire, Guayana has been to the United Provinces of Venezuela. The climate, the lack of energy and enterprise on the part of the inhabitants—the utter want of machinery, and modern science and skill in mining, has retarded the development of this El Dorado of Venezuela. With only the rudest appliances of the mortar, and with dry amalgamation and working only surface ores which show visible gold, Guayana has this year produced over one million and a half of dollars. When we consider the small number who work in the mines, I venture to say that this yield is many a hundred times larger per man, than any other gold producing country. The amount sent forward for the last seven months has been at the rate of about fifteen dollars per day to each man working in the mines.

It is this Eldorado we propose to explore. To examine it in detail, to learn its length and breadth, and to ascertain its probable capacity to produce in the future, is the object of this enterprise.

Of the geology of the country passed in reaching the objective point; of the mountains crossed; of the general features of the country, and finally of the gold region itself, you shall hear from me in future numbers. We have reached this point (Upota) in safety, with good health and fine spirits. We have here a delightful, healthful country, adapted for cattle, corn, and sugar, on the plains, and coffee on the mountains. The city is elevated (by holosteric barometer) 1200 feet above the ocean. The temperature by day rarely varies above five degrees, and the breezes are cooling and refreshing. The health-giving trade wind blows regularly every day across the plains, and this, with cool nights for sleeping, refreshes the inhabitants of those elevated savannas.

My next will be from Nesipati, three days further inland.

S.

Lake Superior Copper Ores.

NEW YORK, Feb. 7, 1868.

EDITOR AMERICAN JOURNAL OF MINING:

Allow me, in reply to yours of 1st inst., on the average qualities of copper ores, to say that by mines extensively worked, which was especially noted in my letter of 27th Jan., I mean mines worked to the depth of say 100 fathoms, and drifted upon in lower levels say 1,000 feet. Have any Ducktown or Copperopolis mines been worked to this extent, so as

to allow a fair comparison? Take the mines of Lake Superior, and allow for all their product in mass, barrel and stamp work, you mention in yours that the rock *crushed* at the Franklin, Quincy, Cliff, &c., yielded but 1¼ per cent. Now I am sure that the rock stamped or crushed at the latter has yielded by average more than 2 per cent., and this is but half the yield, the balance being mass and barrel copper, of which you seem to make no account. By the way, if the mines of Ducktown and Copperopolis are so much more productive and the copper costs less, or say 16 cents per pound, why is it that dividends are not paid? I notice that two of the Lake Superior mines have lately (since Jan. 1st) made dividends of $2 and $3 per share respectively, where you give the cost of the copper at 24 cents per pound.

Subjoined, I give some statistics concerning the Cliff and Quincy mines for the year 1866, taken from their published reports:

CLIFF MINE (PAGE 4 REPORT) ROUGH COPPER PRODUCED.

Masses, net	1,041,200 lbs.
Barrel work, net	495,503 "
Stampings "	969,416 "

The mass and bbls. stuff being 66 per cent. more than the stamp in the total yield. The percentage of *copper* in *rock stamped* was 2.33 *per cent.* (page 15.)

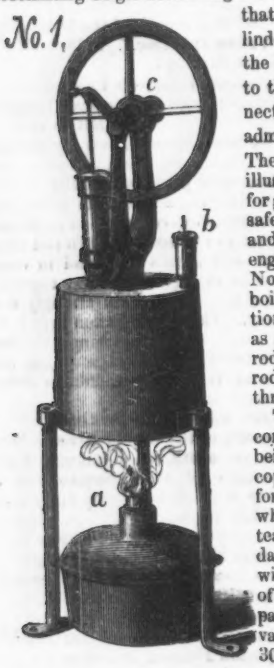
QUINCY MINE (PAGE 9 REPORT) 12 MONTHS WORKING.

Tons of rock stamped	49,903
Pounds of copper produced	2,621,785 lbs.
Per centum of copper per ton of rock	2.63 *per cent.*

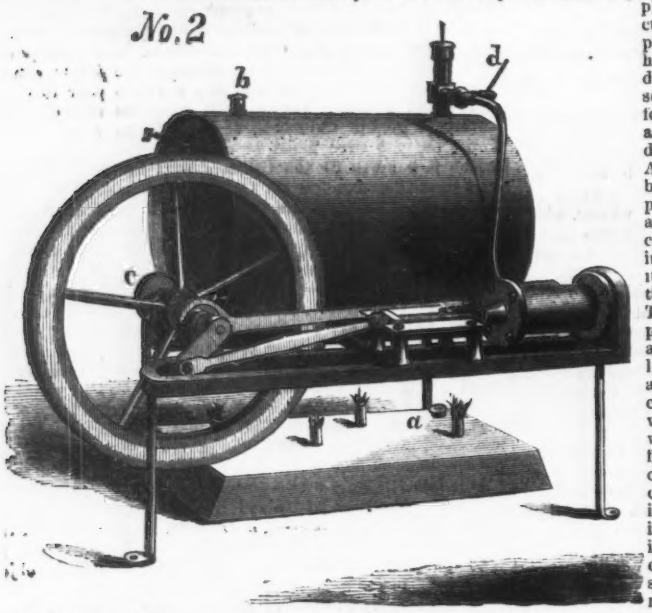
LAKE SUPERIOR.

MODEL STEAM ENGINES.

The accompanying engravings represent two small models of steam engines. No. 1 illustrates the mechanism of an oscillating single action engine, or, in other words, an engine that consists of an oscillating cylinder with piston and piston rod, the latter being attached directly to the crank, and having no connecting rod; the steam is only admitted to one side of the piston. The letters *a*, *b*, *c*, refer in both illustrations to an alcohol lamp for getting up steam, a boiler with safety valve, and a crank, shaft, and fly wheel. No. 1 shows an engraving with a vertical boiler; No. 2 an horizontal engine and boiler with all the main connections and principal attachments, as guides, crosshead, connecting rod, crank, eccentric, eccentric-rod, fly wheel, steam-pipe and throttle, *d* and *e*.



These diminutive engines are constructed for working models, being made of brass, with tin or copper boilers, and are intended for use in schools and institutes, where they aid lecturers and teachers in explaining and elucidating the properties of steam, with the principles and working of steam engines. Working and patent models are made in great variety by H. Shlarbaum & Co., 302 Broadway, New York City.



The Metrical System of Weights and Measures—A Petition from the American Statistical Association.

The petition of the American Statistical Association, recently presented to both Houses of Congress, respectfully asks attention to the following nine propositions, and requests that the principles involved in them may be incorporated in any law that may be adopted in respect to the metrical system of weights, measures and coins:

First—That the American Statistical Association earnestly favors the speedy practical adoption by the people of the United States of the metrical system of weights and measures; the system of which the metre, the litre and the gramme are respectively the units of length, of capacity and of weight, and the use of which, by act of the last (the Thirty-ninth) Congress, has been rendered permissible in the United States in the making of contracts, and has been necessitated by the requirements of several branches of industry.

Second—That our coinage should have simple relations as to weight, with the unit of weight of the metrical system—the gramme.

Third—That the standard as to fineness of our coinage, whether of gold or silver, should continue as now, nine-tenths of fine metal to one-tenth of alloy.

Fourth—That in the opinion of this association no widely-extended and permanent uniformity as to coinage can be secured through the adoption by our Government of any system which is in conflict with the principles above mentioned.

Fifth—That the weight in grammes and the fineness of the coins hereafter to be used should be legibly stamped thereon prior to issue.

Sixth—That the changes required for converting our existing coinage into a metrical coinage, are so slight that the recoinage of the existing coins of the United States would be unnecessary; that the difference between the existing coinage and that proposed, especially as regards gold coins of less denomination than ten dollars, is very considerably less than the deviation now allowed to the Mint, which is one-fourth of a grain for the gold dollar and the quarter eagle, and one-half of a grain for the half-eagle, the eagle, and the double eagle.

Seventh—That in pursuance of the foregoing, the gold dollar should contain one and one-half grammes of fine gold, or its equivalent, one and two-thirds grammes of standard gold (nine-tenths fine), and that other gold coins should be in proportion.

Eighth—That the silver half dollar and the smaller silver coins, hereafter to be issued, should contain of fine silver at the rate of twenty-two and one-half (22½) grammes to the dollar, or the equivalent twenty-five (25) grammes of silver (nine-tenths fine) to the dollar.

Ninth—That the gold coinage, as above described, should be made legal-tender in payment of sums of all amounts; and that the silver coinage should be subsidiary, and admitted to legal-tender to an amount not exceeding $10 in any one payment.

NOTES.

NOTE ON PROPOSITION SEVENTH.—The weight of the existing gold dollar, when new, is slightly—only about three-tenths (3-10) of one per cent.—in excess of the proposed metrical dollar, containing of fine gold 1.505 grammes (a gramme contains 15.438 grains troy, nearly) or of standard gold (9-10 fine) 1.672 grammes, an excess of about five one-thousandths of a gramme, or eight one-hundredths of a grain, about one third of the deviation allowed the Mint.

NOTE ON PROPOSITION EIGHTH.—The existing legal-tender silver five-franc piece of France contains twenty-five grammes of standard silver (nine-tenths fine), or twenty-two and one-half grammes of fine silver, the same as herein proposed.

Our existing fractional and subsidiary silver coins are somewhat smaller than the above, about one-half of one per cent., containing of standard metal at the rate of 24 88.100 grammes to the dollar, instead of 25 grammes, the difference being inconsiderable.

NOTE TO PROPOSITION NINTH.—It will be observed that the proposed silver coinage has precisely fifteen (15) times the weight of the proposed gold coinage of the same denominations. The market equivalent is, and for the past sixty years has constantly been, greater than this, the value of gold relatively to silver having averaged, for the past fourteen years, about 15 3-8 times that of silver. Hence, by the above propositions, silver is over valued, as, according to the experience of all commercial nations, it should be. But to prevent the silver from driving the gold from circulation, it is necessary, as, proposed, that the silver should be legal tender only in payment of sums of small amount. The limit in the United States is now five dollars; in England forty shillings (about ten dollars).

Tempering Files.

Tomlinson's *Cyclopedia* gives the following directions as to the method of tempering files: "Before being hardened the files are drawn through beer-grounds, yeast, or other adhesive fluid, and then through common salt mixed with roasted and pounded cow's hoof; the objects of which are to protect the teeth from the direct action of the fire and the oxidizing influence of the air; to afford an index of temperature, the fusion of the salt showing when the hardening heat is attained, and to lessen the tendency of the files to crack on being immersed in water. The files, in the process of cutting, become slightly curved, and it is necessary to straighten them before the hardening is completed. Some forms of files are apt to become curved in the act of hardening; such, for example, as the half-round file, which sometimes becomes hollow or bowed on the convex side; hence, to produce a straight file, it is purposely bowed, while soft, in the reverse direction. Most of the other forms of file are gradually heated to a dull red, and then straightened by striking them with a leaden hammer upon an anvil of the same material. A warped file is also in some cases straightened by being inserted between a couple of iron bars, fixed parallel a short distance apart, and then pressed in an opposite direction to the bend intended to be corrected. After the straightening, the file is placed in the fire again and heated until the salt fuses upon its surface; it is then immediately removed from the fire and plunged into a cistern of cold water. The method of plunging it into the water is of importance; it is held by the tang with a pair of tongs, and immersed quickly or slowly, vertically or obliquely, according to its form; that method being adopted which has been found by experience best calculated to keep the file straight. It is, however, very difficult to prevent some degree of set or curvature in quenching the files. Each file is, therefore, narrowly watched, and after being plunged once into the water, if any bending is observed, it can be remedied before the file is cold, by inserting it between the bars before mentioned, pressing upon it with considerable force, and lading the water upon it with the hand: considerable curves may be corrected in this way. It is, however, in some cases necessary to reheat the files, for which purpose they must not be placed in the forge file, or the teeth would be injured now that the smearing has been washed off; they are, therefore, held over a clear fire, or placed on a heated iron bar, or over a hooded gas flame, and when straightened are quenched in oil to prevent the teeth from becoming rusty. After the hardening, the tang is tempered by immersing it in molten lead, for if the tang were left as the file, it would be liable to snap off during use. The files are next scoured with scrubbing brushes dipped into sand and water or coke dust and water, and left for some hours in order to get rid of every particle of salt. They are then thoroughly dried at the fire, rubbed over with olive oil containing a little turpentine, and are now considered as finished.

Gold Mining in Australia.

The amount of Australian gold received in England in 1867, except December, was £5,291,014, against £6,231,612 in the corresponding period of 1866, and £4,276,128 in the corresponding period of 1865. In 1866 the value of the Australian gold imported into Great Britain was computed at £6,839,647; in 1865, £5,051,170; in 1864, £2,656,971; in 1863, £5,995,368; in 1862, £6,704,753; in 1861, £6,331,225; and in 1860, £6,719,000. A nugget of solid gold weighing 37 ounces has been found recently in Victoria Colony—on Gorman's claims, Jericho. On September 30 the number of miners in that colony was 66,243, of whom 18,092 were Chinese; the area of land mined upon was 818 square miles; and the quartz ledges reported to be auriferous, 2,421. Of the mining population, of which the aggregate is given above, there were 34,107 Europeans and 18,067 Chinese engaged in mineral workings, and 14,044 Europeans and 25 Chinese employed in quartz mining. On the alluvial mines there were 471 engines, of 9,917 horse power, at work; and in quartz mining 542 engines, of 9,330 horse power. The approximate value of the mining plant was £2,047,570. Ballarat employs the largest number of miners (13,871), Castlemaine comes next, Sandhurst follows next, and then in order come Maryborough, Beechworth, Ararat and Gipps Land. In the southern division of Ballarat there were 8, and in Dunolly 17 Chinese quartz miners, and these were the only two localities in which the Celestials have attempted to mine the rock.

Manufacturing and Mechanical Notes.

No. VII.

Microscopes.

No field of inquiry is more inviting and promises a richer harvest than that which is developed by the microscope, and few departments of education are more important and interesting than this. For the microscope reveals

> "Contrivance intricate, expressed with ease,
> Where unassisted sight no beauty sees;
> The shapely limb and lubricated joint,
> Within the small dimensions of a point,
> Muscles and nerve miraculously spun,
> His mighty work who speaks and it is done."

There are two kinds of microscopes, denominated simple and compound. When a convex lens is placed between the eye and an object situated a little nearer than its focal distance, a magnified and erect image will be seen. The single microscope consists of such a lens the object being on one side and the eye at the other. The linear magnifying power of such a lens is found by dividing the distance of distinct vision by its focal length. The compound microscope commonly consists of three lenses that are termed the object-glass, the field-glass, and the eye-glass. Beyond the object-glass is placed the object, at a distance somewhat greater than the focal length; a magnified image is therefore produced, and this, being viewed by the eye-glass, is still further magnified, and, of course, seen in an inverted position. The use of the field-glass is to intercept the extreme light coming from the object-glass, which would otherwise not fall on the eye-lens. It therefore increases the field of view, and hence its name. To determine directly the magnifying power of this instrument, an object, the length of which is known, is placed before it. Then, one eye being applied to the instrument, with the other we look at a pair of compasses, the points of which are to be opened until they subtend a space equal to that under which the object appears. This space being divided by the known length of the object, gives the magnifying power. The simple microscope, if of a high power, can be used with but very little satisfaction or comfort, owing to the fact that both the object and the eye must be very near the lens, and it is difficult to get and retain the focus during the examination, as every one is aware who has attempted to use the little lens set in a plate of silver or metal. We have, in the "Craig Microscope," an instrument which requires neither skill nor experience, and but very little time and patience, to make numerous examinations of microscopic objects. Although it has but one lens, yet its shape and composition are new, and, practically, it stands midway between the simple and compound microscope; and the serious obstacles, named above, to the general use of either of these instruments, are obviated in this new microscope. The lens is neatly mounted in hard rubber, at the summit of the instrument; the stand is either of brass or rubber, about five inches high; the focus is on the under or flat surface of the lens, the object glass is placed immediately beneath the lens, and two or three inches below this there is a mirror to reflect the light on the under surface of the object and lens. The magnifying power of this instrument is greater than that of the cheapest compound microscope, and, in fact, is just about the power most frequently required in making microscopic examinations. There is no end to the objects suitable for a microscopic examination—they are innumerable. Take, for illustration, a common house-fly. First, we have his feet; we have all noticed the ease with which he walks on the ceiling with his feet up, and we, perhaps, have wondered at this, but the microscope reveals two small sharp claws. But how can he walk on the under surface of smooth glass? surely his claws can be of little service to him here; but on examination we find that he has two pads, or spongy bodies, between the claws, which enable him to adhere to smooth surfaces. Remove his proboscis, and place it beneath the lens, and it will be found to be a wonderful and beautiful object. Shave off the front part of one of the eyes, wash it in a drop of water, and then examine it, and you will find a multitude of small eyes through which the insect looks in different directions, for his eyes are stationary. Examine his wings, for they are worth looking at, although not as beautiful as those of the black wasp and many other insects. Next, shave off his face and examine it, and you find it a beautiful object. Beneath his wing you will find a small scale, or wing, which will pay you for the trouble of an examination. So we may examine every part of the fly, which is either very minute or sufficiently transparent for the light to shine through it, and discover new wonders and new beauties. Every insect may be examined in the same way, for no two are alike even in the same parts, and some have additional organs. The bee has his sting, the roach and cricket their antennæ, or feelers; all very beautiful objects when viewed through the microscope. Hair, wool, fur, feathers, silk, linen, scales from a butterfly's wing, small seeds, thin slices of orange, lemon, or apple-peel, or the surface of a strawberry, are only a few of the multitude of interesting objects. Liquids are very readily examined by the aid of this microscope. The globules of the blood, milk, and pus may be seen; also the animalculæ of stagnant water, and the eels in vinegar. There are no animalculæ in spring or well water, and few, if any, in running water. But put a small handful of hay into a glass or cup of water, and allow the glass to stand in a warm, light place for eight or ten days, and you will have a bountiful supply of microscopic objects; or take a drop of water from a stagnant pool or ditch, or sluggish brook, dipping it from among the green vegetable matter on the surface. On holding the water to the light

it will look a little milky, but, on placing the smallest drop under the microscope, you will find it swarming with hundreds of strange animals that are swimming about with the greatest vivacity. These animalcules exist in such multitudes that any efforts to conceive of their numbers bewilder the imagination. Sugar, or salt, partially dissolved, or dissolving, presents a beautiful appearance; and when dissolved, and the water allowed to evaporate on the lens, the wonderful manner in which crystals form may be witnessed. A fine assortment of microscopic objects, with a microscope, furnishes a chaste and elegant entertainment for friends and neighbors, young and old; but the use of this instrument is not confined to the examination of mounted objects alone, which are more or less expensive, for it can be used to view innumerable objects, of the most beautiful form and color, which the unaided can never behold, and which cost nothing. In this microscope, then, we have a scientific instrument adapted to popular use, and so simple that a child can use it, and so cheap as to be within the reach of all. The microscope, like a book, spy-glass, telescope, etc., should be found in every school and college, as one of the means and facilities for thorough and complete education. The most powerful miscroscope ever made has been constructed by Messrs Powell and Lealand, of England. The power of this instrument is fully double that of any which have hitherto been made; and it altogether supersedes what had before been considered the utmost attainable limit of perfection in this instrument. This microscope magnified 3,000 diameters with its lowest eye-piece, and 15,000 diameters with its highest.

Patent Claims.

Interesting to Miners, Millmen, Metallurgists Oil-Men and Others.

74,196.—HYDRO-CARBON BURNER.—Calvin Carpenter, Jr., Astoria, N. Y., assignor to H. H. Wolcott.

I claim, 1st. The within described process of burning crude petroleum, and separating from it the heavy parts fit for lubricating oil by passing currents of air up through the body of the petroleum to be burned, said petroleum being made to float on water, substantially as and for the purposes set forth.

2d. The arrangement of one or more cisterns, B, surrounded by a water jacket, C, and provided with air bonnets, b, below, and with pipes, e, to draw off the heavy oil, substantially as herein described.

3d. The arrangement and combination of the slide, i, with the cisterns or cisterns, B, in the burner, A, substantially as and for the purpose set forth.

4th. The arrangement of a rose, j, over each of the cisterns, B, in combination with the air bonnets, b, below, substantially as and for the purpose described.

5th. The escape apertures, g, in the water jacket, C, surrounding the cistern or cisterns, B, substantially as and for the purpose set forth.

74,206.—MACHINE FOR GRINDING THE ROLLS OF ROLLING MILLS.—Henry Disston, Philadelphia, Pa.

I claim, 1st. A plate, E, secured to the frame of a rolling mill, and having a guide for receiving a traversing slide which carries a grindstone or the grinding wheel, to which a rotary motion is imparted, all substantially as and for the purpose herein set forth.

2d. The plate, E, in combination with the within-described devices, or equivalent devices, whereby it can be made to assume different curves, as and for the purpose specified.

74,216.—MACHINE FOR BEVELING THE EDGES OF SLATES.—Stinson Hagaman, Wiessport, Pa. Antedated Jan. 27, 1868.

I claim, 1st. The beveled grinding wheels, arranged and operating substantially as and for the purpose described.

2d. In combination with the beveled grinding wheels, the guide timbers, E E', arranged substantially as and for the purpose described.

3d. In combination, the drum, B, the belts, D and D', the beveled wheels, C and C', and the guide timbers, E and E', all arranged and operating substantially as described.

74,217.—SMELTING AND DESULPHURIZING IRON ORE.—Alexander Hamer, New York City.

I claim, 1st, The method herein described of desulphurizing both the ore and the fuel in a blast furnace, by the introduction of nearly pure hydrogen, in combination with the blast, as set forth.

2d. The method herein described of desulphurizing both the coal and the iron in a puddling furnace, by means of separate jets of hydrogen, as set forth.

74,281.—APPARATUS FOR WASHING GOLD ORE.—Seth L. Beckwith, San Francisco, Cal.

I claim, 1st. The device for imparting to the pans, E F G, the peculiar swinging motion used for separating metals when only mechanically mixed, by hanging them to rotating upright crankshafts, in manner substantially as and for the purposes above set forth and described.

2d. The pan, E, provided with a double bottom, whereof the upper one is arched and perforated, and the lower funnel shaped, in manner substantially as above set forth and described.

3d. The pan, F, divided into chambers, substantially as above described, the walls whereof are crowned by the overhanging ridges, b, in manner substantially as above set forth and described.

74,374.—PUDDLING FURNACE.—Thomas J. Jones, Scranton, Pa.

I claim the combination of the brick and bosh, as herein described, and used with a furnace, substantially as and for the purposes specified.

Special Scientific Brevities.

☞ An English mechanic, named Sarboy, is said to have solved a problem which has so long foiled the efforts of engineers and scientific men, in discovering a certain means of detecting the alteration in the texture of iron, or cracks, or minute defects, invisible to the eye, which have been a fruitful cause of the breaking of railway axles and other machinery. Mr. Sarboy, it is said, has found that, when an iron bar is homogeneous, the magnetic needle will not be suddenly displaced from its position on being slowly moved to and fro in a direction perpendicular to the magnetic meridian of the locality; but if there be in the bar any unsound place, a fault or flaw, the oscillation of the needle will become very intense as it passes over these defective points. In view of the loss of life and property resulting from flaws in the iron work of machinery, the discovery of such a test of iron must prove of great value.

☞ The *Journal des Connaisances Medicales* describes as follows the preparation of coniferine, a substance resembling salicene, and extracted from various kinds of fir. The wood is stripped of its bark, rasped, and then subjected to the action of a press. A thick juice is thus obtained, which after being heated, strained, and evaporated, deposits crystalline needles of coniferine, which is bitter; the mother ley, on the contrary, is sweet. The crystals are redissolved in water, dissolved by lampblack, and then recrystalized in weak alcohol. Coniferine is but little soluble in cold, but dissolves readily in boiling water; it is scarcely soluble in alcohol, and not at all in ether. The watery solution is bitter, levogyre, is not precipitated by the acetates of lead, and gives no color with perchloride of iron. Treated with concentrated sulphuric acid, coniferine changes from white to a deep violet.

☞ An important discovery has been made at Bordeaux and communicated to its Scientific Academy. Within the space comprised between the rues Victor and Trois-Conils on one side, and du Paugue and Rohan on the other, a pre-historical lacustral station has been discovered. M. Delfortrie assigns an age of seven or eight thousand years to this station, marked by a thick bed of ashes covering a prodigious quantity of oyster shells, mixed up with flint hatchets and implements in perfect preservation, and, what is most remarkable, handles of instruments of weapons made out of metarsial bones sawn half-way through the middle of their diaphyses. As the station bears a strong relation to the Kejolkenmoddings, of Denmark, it is therefore older than the lacustral villages of Switzerland.

☞ A new anesthetic agent has been prominently brought forward by Dr. Richardson. It is bi-chloride of methyline, a substance pertaining to the series of methlic ether. It is as powerful as chloroform; its action is more rapid, but the dose must be somewhat stronger; it produces a second degree of narcotism, which does not last so long as that produced by other anesthetics, but which may be easily reproduced; it causes very little disturbance; its elimination is rapid and recovery almost sudden; it will occasionally cause vomiting, and when it kills it is by paralyzing both the circulating and breathing apparatus; but this misfortune occurs much more seldom than with chloroform.

☞ Mr. J. A. Miller has remedied a difficulty long experienced by engineers in keeping steam-joints tight for a long time, without expensive rubber packing, by placing a thin sheet of muslin between the flanches of the pipes which are previously painted. The muslin is a receptacle for the paint, holding it in place and preventing the steam frow blowing it out, which is usually the case, when paint alone is used. The paint preserves the cloth, and thus makes a permanent packing.

☞ At the weekly meeting of the members of the Royal Institution in London, Professor Tyndal delivered his second lecture on "Faraday as a Discoverer." The Professor concluded by giving an affecting account of Farraday during his illness, and read two letters which he had written, in one of which, dated in the autumn of 1865, he alluded to his loss of memory, and of not being able to recollect at the end of one line what he had written in the line before.

☞ A new machine for making iron and steel chains and cables by unskilled labor, attracts some attention in England. It is said that cables of any size can be made with the greatest facility in a shipbuilder's own yard, with great saving in both labor and fuel. Excellent horseshoe nails, made by steam machinery instead of hand labor, can now also be supplied.

☞ Petroleum is bleached by shaking it successively and repeatedly with oil of vitriol, and then with a strong solution of caustic soda, allowing the oil to separate each time. A subsequent distillation will also greatly improve it.

On-dit about Minerals, &c.

☞ The Syracuse *Standard* says another salt well has been discovered at Port Sarnia, Canada, on the lake shore, which is supposed to penetrate the same bed of salt as the Gooderich wells. It is understood the brine is very strong and pure, and measures will of course be taken to develop more fully the resources of the region. Persons familiar with these new discoveries say that experiments prove that the Gooderich and Port Sarnia wells penetrate a bed of nearly pure salt, at a depth of about 1,800 feet, and the water raised from the wells is nearly pure and very abundant.

☞ A cable dispatch asserts that it has been officially stated that the Portuguese Government has authorized Edward Medlicott, banker, of Lisbon, and Thomas Rumball, engineer, of London, to lay a new telegraphic cable across the Atlantic. The line is to be run from Falmouth, England, to Oporto; thence to the Azores, and from these islands to some point on the coast of the United States. The new cable is to be submerged on the Allan principle, and it is estimated that the total expense of the enterprise will not exceed £600,000 sterling.

☞ The imports of minerals into France during the first eleven months os 1867 were 470,770 tons, as compared with 422,639 in the corresponding period of 1866. Algeria furnished 162,000 tons of the total quantity of minerals imported in the first eleven months of 1867, against 100,000 tons in 1866, showing a remarkable increase in the deliveries of Algerian minerals last year.

☞ The Vincennes *Times* says that a vein of coal in the upper end of Knox county, Indiana, has been probed fifteen feet, and yet the prospectors have not succeeded in getting through the vein. The coal lies immediately on the Indianapolis and Vincennes Railroad.

☞ The amount of gold in the Treasury of the United States February 18th, was $104,400,000; of which sum there was payable in gold certificates $28,700,000, leaving a balance of $75,300,000 in gold coin belonging exclusively to the United States.

All Sorts.

☞ A "real image" stereoscope has been produced in Paris. In the ordinary stereoscope the observer places his two eyes opposite two lenses, and sees the virtual images of two pictures apparently at the same place. In the "real image" stereoscope the observer stands about two feet from the instrument and looks at a frame containing a single large lens. He then sees—just in front of the lens—a real and inverted image of each of the two pictures, the union of which forms the appearance of a solid figure or "ghost" in the air, between himself and the apparatus.

☞ Langley's "Year Book of Facts" gives the total area of the three Pacific States and four Territories (not including Arizona) at 815,770 square miles, and the population at 737,000 souls. As this is considerable less than one person to the square mile, it will be seen that there is plenty of room for more people. With only six persons to the square mile, the population of the territory alluded to would only be 4,894,620. The soil can support at least twenty to the square mile, or a total population of 14,315,400.

☞ An invention of an American named John B. Wickersham is finding great favor in Paris. It is a passenger railway system in which the cars can run on flat rails without flanged wheels, while a fifth wheel, running in a centre rail with a groove, kept them on the track, and that by raising this wheel they could be very easily run off the track to go around obstructions.

☞ It appears from statistics kept in France that during the last thirty years more than ten thousand people were struck by lightning, of whom two thousand two hundred and thirty-two were killed outright. Eight hundred and eighty were killed during the last ten years, and of those only two hundred and forty-three were females.

☞ The Chilian gun now being built at Pittsburgh is 22½ feet in length, being 2 feet longer than the famous Rodman gun at Fort Hamilton, but of exactly the same bore, 20 inches. Its greatest diameter is 5 feet 4 inches, its least diameter 2 feet 9 inches. The gun is designed for garrison or naval service.

☞ The momentum of an ancient battering ram of 180 feet in length and 28 inches in diameter, armed with an iron head weighing a ton and a half, and moved by the united strength of a hundred men, was equal to the momentum of a 36 pound shot discharged point blank.

☞ The Senate Committee on Territories have agreed to report favorably the bill for the admission of Colorado as a State.

☞ Elastic boot-heels are a new invention, and are said to be good.

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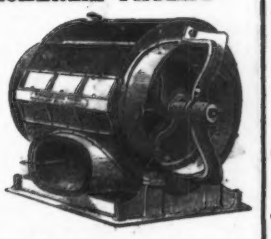

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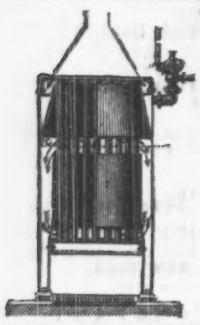

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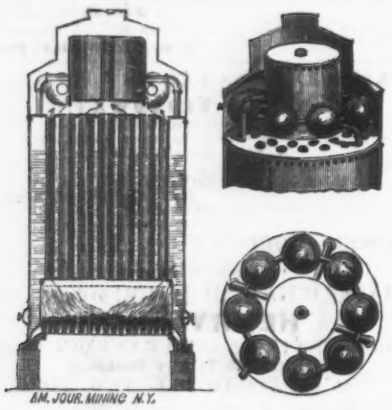

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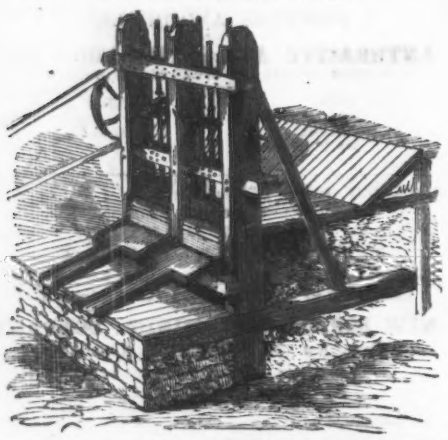

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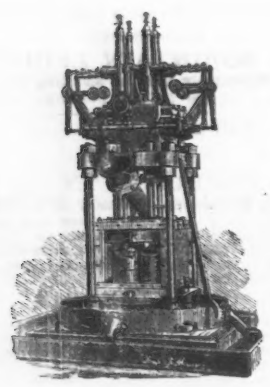

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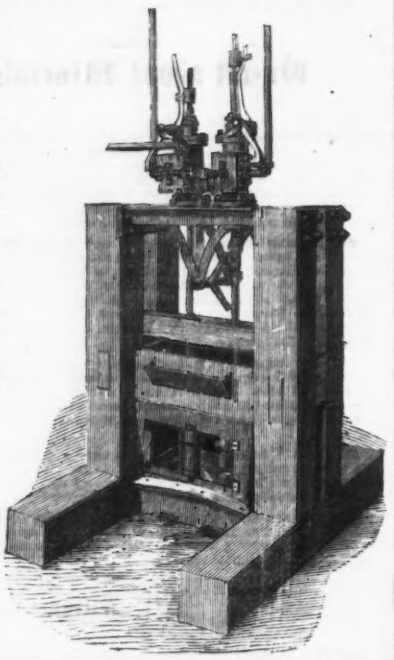

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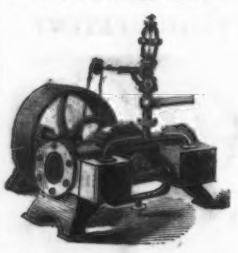

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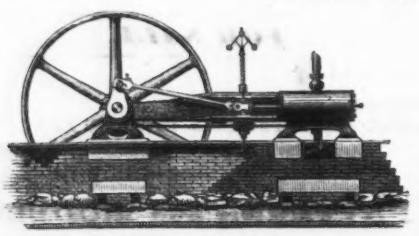

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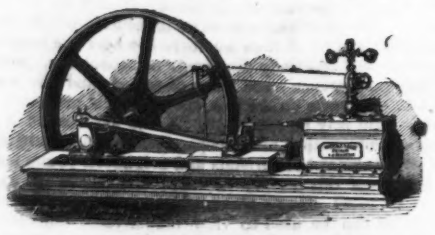

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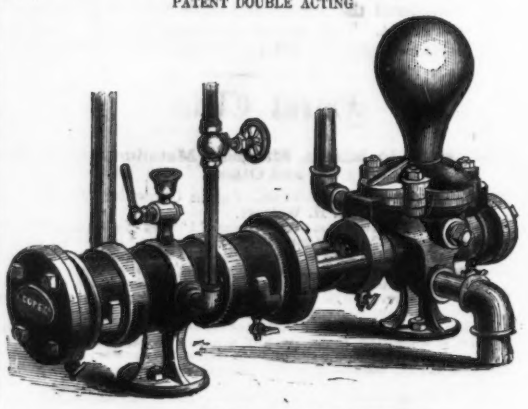

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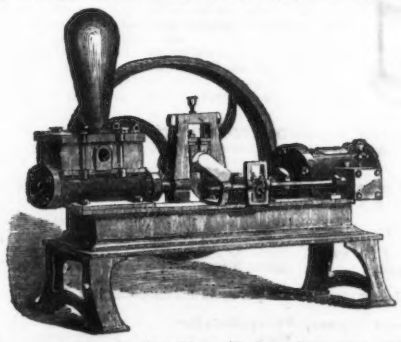

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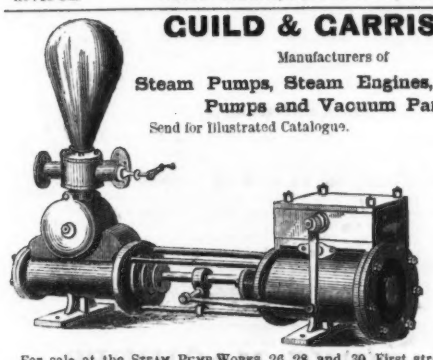

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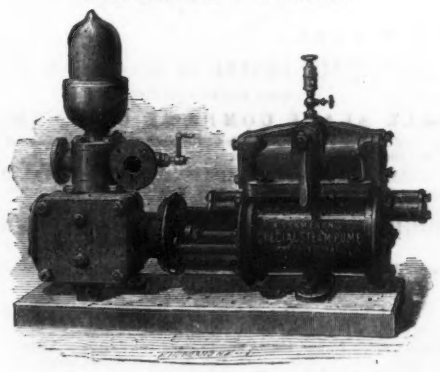

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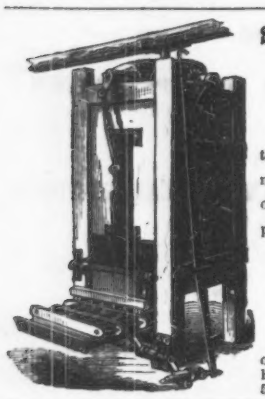

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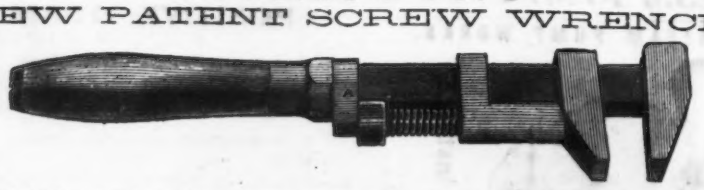

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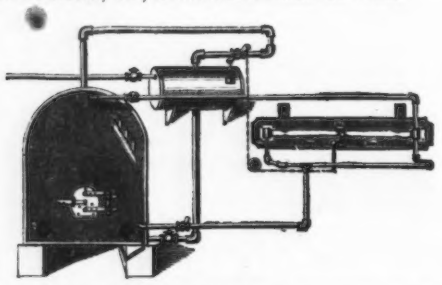

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CHARLES SCHENK, M. E.
References—Wm. A. Smith, Esq., 25 and 27 Nassau street.
Prof. Harper, New York, etc. oct12, '67:'68

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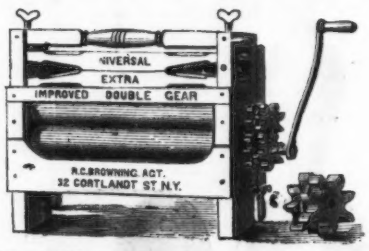

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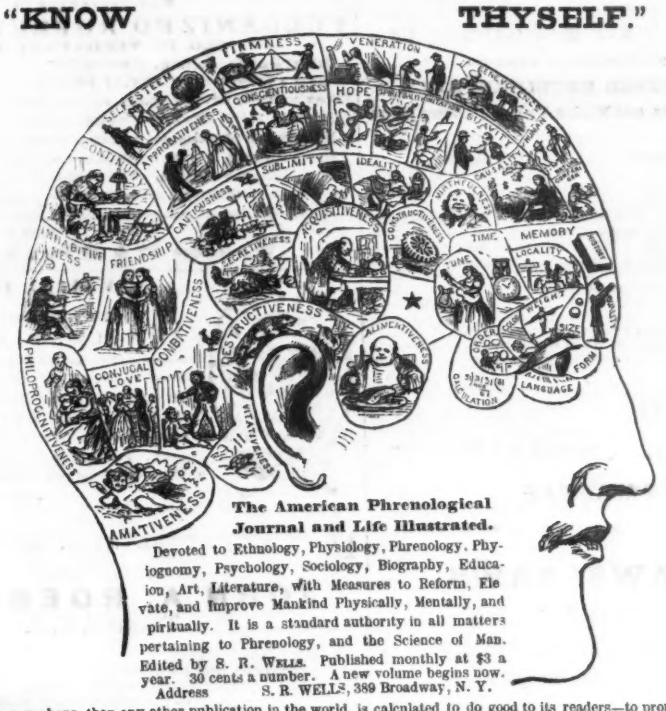

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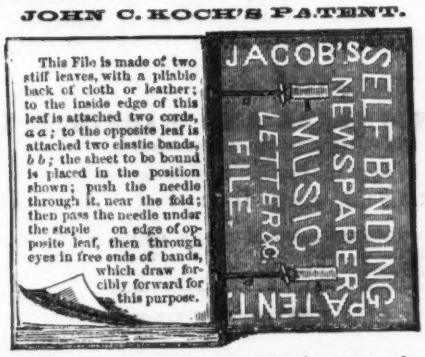

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The best and surest means to this end is to furnish the Spanish American consumer with full and accurate information regarding the commerce, manufactures, mechanical arts, mining, metallurgy, railways, &c., of this country, setting forth in these departments our superiority to the nations of the Old World, and explaining the advantages offered in our markets.

Our conviction of the usefulness of such a step, based upon long and careful examination of the subject, and thorough personal acquaintance with each one of the Republics in question, their resources, interests and requirements, has received, of late, additional confirmation from communications addressed to us, as Publishers of the AMERICAN JOURNAL OF MINING, by prominent and influential citizens of Mexico and the other Hispano-American Republics, pointing out the expediency of either translating our Journal into Spanish, or publishing a periodical in that language for circulation in those countries. These gentlemen have urged us to put the plan into immediate execution, and promised us their influence and personal support.

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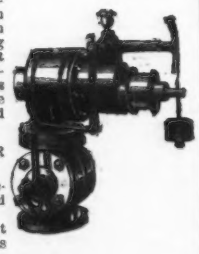

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